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Engineering and Environmental Consultants

HABITAT MITIGATION AND MONITORING PLAN ACOE FILE NO. 2003-00826-SDM WHETSTONE RANCH

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

(Figures follow text)

APPENDICES

DESCRIPTION OF THE PROJECT/IMPACT SITE

PROJECT LOCATION

The proposed Whetstone Ranch development is located within the City of Benson in Cochise County, Arizona. The Property is in Township 17 South, Range 20 East, Sections 31 through 33, and Township 18 South, Range 20 East, Sections 3 through 10 and 15 through 18, of the Gila and Salt River Base Meridian. The Property's northern limits are approximately three miles south of Interstate 10 (I-10), and the western boundary is adjacent to the State Route 90 (SR 90) right-of-way (Figure 1).

PROJECT DESCRIPTION/OVERALL PROJECT SUMMARY

Whetstone Partners LLP (Whetstone) proposes to develop the approximately 8,200-acre Whetstone Ranch (the Project) as a master-planned community that includes residential and commercial land uses, and associated storm water management facilities, roadways, utilities, and recreational amenities. Low- and medium-density residential development is planned for most of the Project, resulting in approximately 20,000 residential lots. Commercial development will occur on the western portion of the Property, primarily within one-quarter mile of SR 90.

The Property is currently privately owned land that has been historically used for livestock grazing. Land use of the Property will be changed to residential, commercial, and recreational uses associated with the development of a mixed-use, master-planned community. The Property and adjacent lands along the SR 90 corridor south of I-10 were annexed by the City of Benson in 1994. The City of Benson General Development Plan (General Plan) identifies the Project and the SR 90 Corridor from I-10 south to Kartchner Caverns as an area designated for low-density residential (LDR) to medium-density residential (MDR) master planned communities, commercial development, and associated roadways, drainage, and landscape improvements. The General Plan defines LDR as areas with up to three residences per acre (RAC) and MDR as areas with 3 to 10 RAC. The Project includes LDR and MDR residential development, commercial development, and associated infrastructure improvements that are consistent with the General Plan. These land uses are currently occurring along the SR 90 corridor and the General Plan describes the Project as one of two master-planned communities that will be constructed within this area.

RESPONSIBLE PARTY

Whetstone Partners LLP
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JURISDICTIONAL AREAS TO BE FILLED BY HABITAT TYPE

The Property encompasses land along the northeast slope of the Whetstone Mountains, extending eastward to the San Pedro River. Vegetation biomes of the Property area consist of Chihuahuan desertscrub, Semidesert grassland, and ecotonal areas characteristic of each community. Ephemeral drainages traverse the Property generally from southwest to northeast in relatively incised channels that ultimately discharge to the San Pedro River. Water flows in these ephemeral washes for short duration in response to local precipitation events. These drainages are lined with xeroriparian habitat such as velvet mesquite (*Prosopis velutina*), catclaw acacia (*Acacia greggii*), and occasional larger stature net-leaf hackberry (*Celtis reticulata*), Arizona walnut (*Juglans major*), and Arizona ash (*Fraxinus pennsylvanica* var. *velutina*)

Approximately 475 acres of ephemeral drainages, or jurisdictional waters of the US (waters of the US), are located on lands within the Property. Based on the current conceptual development plan (as described in the Environmental Assessment), 51 acres (11 percent) of the waters of the US and associated xeroriparian habitat will be impacted from discharge of fill material for construction of roadway crossings, utility crossings, bank protection, and building pads (Table 1). These unavoidable discharges and associated indirect impacts have been minimized to the maximum extent possible and are necessary to meet the Project's purpose and need.

Table 1. Summary of Unavoidable Impacts to Waters of the US Resulting from Development of the Whetstone Ranch

Impact	Acres
Residential & Commercial Development	17.8
Roads	15.1
Utilities	2.0
Golf Courses	11.7
Trails	0.6
Contingency	0.2
TOTAL	**51.0**

Source: Rick Engineering (2005)

The proposed impacts to waters of the US will not impede or substantially alter flow patterns, and post-construction upstream and downstream conditions of waters of the US should remain essentially unchanged. Therefore, the majority of waters of the US within the Property, about 89 percent (424 acres of the ephemeral washes) will be unaffected by development activities and will remain in a natural state to provide cover, migration, and dispersal corridors for wildlife.

Proposed compensatory mitigation for impacts to waters of the US from the Project consists of preservation in perpetuity of the avoided jurisdictional waters and associated xeroriparian habitat (a total of 1,624 acres of natural open space) within the Property, and the acquisition, preservation, enhancement, and restoration of a nearby off-site, 144-acre parcel (the Off-site Mitigation Parcel) of meso- and

hydroriparian habitat, a small special aquatic site, and two agricultural fields along an ephemeral reach of the San Pedro River. These preserved areas are collectively referred to as the "Mitigation Lands".

TYPES, FUNCTIONS, AND VALUES OF JURISDICTIONAL AREAS TO BE DIRECTLY OR INDIRECTLY IMPACTED

Waters of the US to be impacted by the Project are ephemeral drainages (desert washes) that support flows during and immediately after significant storm events and therefore have largely transient functions and values. Ephemeral waterways in this region primarily provide for flood flow and sediment conveyance, protection of surface water quality, groundwater recharge, erosion control, and wildlife habitat and dispersal corridors. Other functions attributed to perennial and intermittent waterways play a less important role in these ephemeral, lower productivity ecosystems (e.g., flood flow attenuation and retention; sediment and toxicant retention; and nutrient removal, retention, and transformation). Ephemeral washes also provide human values such as educational and recreational opportunities while maintaining the natural aesthetic and connection to the greater landscape. Although important, these values of ephemeral washes may be considered secondary to groundwater recharge and wildlife habitat functions.

Stormwater runoff volume within the waters of the US on the Property will increase as a result of development in upland areas; however, sediment-transport capacity, flow velocity, depth of flow, and potential for scour will not be adversely affected by this Project according to a hydrological analysis commissioned by Whetstone. Stormwater flows will not be obstructed following construction activities and development of the Project and disturbed areas within jurisdictional waters of the US will be revegetated in a manner that minimizes the movement of sediment or debris.

Stormwater velocity will be reduced and pollutants will be removed using on-site capture and infiltration of runoff in vegetated basins and depressed areas, and/or a combination of other appropriate drainage systems using Best Management Practices consistent with the goal of avoiding and minimizing impacts to waters of the US. The basins and/or depressed areas will retain stormwater discharge from residential and commercial portions of the Project at volumes less than or equal to a two-year storm event.

The groundwater recharge function of waters of the US will largely be preserved or supplemented. About 89 percent of jurisdictional waters on the Property will remain undisturbed and post-development stormwater runoff will be metered from the retention/detention basins described above.

Moisture conditions in excess of local precipitation promote higher vegetation biomass and vegetation structure in xeroriparian washes relative to surrounding uplands. Total vegetation volume (biomass) of Sonoran desertscrub has been measured at 0.46 m^3/m^2 at sites in southeastern Arizona (Mills et al. 1989). Vegetation volume in xeroriparian communities in Pima County ranges between 0.50 m^3/m^2 and 0.85 m^3/m^2(SWCA, Inc. 1993). Comparatively, vegetation volume in xeroriparian washes on the Property

averages 0.54 ± 0.16 (SD) m^3/m^2 (WestLand Resources, Inc. 2005). These values of average xeroriparian vegetation biomass will remain unaffected by development of the Project.

Xeroriparian vegetation on the Property is comprised predominantly of two species: mesquite and catclaw acacia (81 to 100 percent of the vegetation volume). Mesquite comprises 62.6 ± 8.2 percent of the vegetation volume, followed by catclaw acacia at 30.0 ± 9.6 percent. Four other shrub species (burrowweed, *Isocoma tenuisecta;* whitethorn acacia, *Acacia constricta*; snakeweed, *Gutierrezia sarothrae*; and desert honeysuckle, *Anisacanthus thurberi*) contribute 7.4 ± 7.9 percent of the vegetation volume; however, their frequency of occurrence is substantially lower than the two dominant species.

Wildlife migration and dispersal corridors will be maintained along ephemeral drainages through the Project during and after its development. The functions these ephemeral drainages provide relative to surrounding uplands will be preserved as part of Project development and management of open space areas.

GOALS OF THE COMPENSATORY MITIGATION PROJECT

TYPE AND AREA OF HABITAT TO BE ESTABLISHED, RESTORED, ENHANCED, AND/OR PRESERVED

Whetstone has proposed a compensatory mitigation program to offset unavoidable impacts to waters of the US resulting from the Project. The type and area of habitat to be established, restored, enhanced, and/or preserved within the Mitigation Lands includes:

1. the avoided ephemeral washes (424 acres of waters of the United States) on the Property;
2. the associated xeroriparian habitat (1,200 acres) within the Property which will be set aside as natural open space; and
3. the Off-site Mitigation Parcel (approximately 144 acres, including about 115.3 acres of riparian woodland, 22 acres of irrigated agricultural land, and an estimated 6.7 acres of jurisdictional waters along the San Pedro River).

The xeroriparian habitat will consist of a 25-foot wide buffer area along all avoided washes (the Primary Buffer) that will restrict human uses, including trails, in accordance with the restrictive covenants. Outside of the Primary Buffer will be a Secondary Buffer that will allow for limited human access for pedestrian and equestrian trails, but will otherwise be preserved in a natural condition in accordance with the restrictive covenants. (Two forms of restrictive covenant will be used – one allowing for trails in the Secondary Buffer and a second prohibiting trails in the Primary Buffer and jurisdictional washes. A third form will be used for the Off-site Mitigation Parcel, which will allow for active restoration and revegetation of the site.)

The geomorphology (landform) within the Off-site Mitigation Parcel includes the active San Pedro River channel, adjacent active floodplains, and abandoned floodplains. The abandoned floodplains include both undisturbed and disturbed (cleared for agricultural purposes) areas. The extant riparian habitats in the active floodplain (low terraces and sandbars near the river) are hydroriparian woodland and scrubland dominated by exotic saltcedar (*Tamarix ramosissima*) interspersed with isolated patches and individuals of mature Fremont cottonwood (*Populus fremontii*) and Goodding willow (*Salix gooddingi*). The abandoned floodplain (upper terrace several meters above the river) is occupied by mesoriparian mesquite woodland of intermediate age. Within the mesquite woodland on the abandoned floodplain is an artesian spring and wetland complex. The agricultural lands are currently furrow-irrigated.

The ephemeral washes and xeroriparian and mesoriparian habitats will be preserved in their natural state, and the agricultural lands will be retired and actively managed to restore a mesoriparian habitat similar to the adjoining habitat.

Appropriate restrictive covenants or conservation easements acceptable to the US Army Corps of Engineers (Corps) will be recorded against the Mitigation Lands to protect in perpetuity their ecological values. Appendix A outlines a sample format for the restrictive covenants for Mitigation Lands. As noted above, two forms of restrictive covenant will be used on site – one allowing for trails in the Secondary Buffer and a second prohibiting trails in the Primary Buffer and jurisdictional washes. A third form will be used for the Off-site Mitigation Parcel, which will allow for active restoration and revegetation of the site.

SPECIFIC FUNCTIONS AND VALUES OF HABITAT TYPES TO BE ESTABLISHED, RESTORED, ENHANCED, AND/OR PRESERVED

The goal of the compensatory mitigation effort is to preserve the functions and values of the ephemeral washes and adjoining xeroriparian and mesoriparian habitats where they have not been degraded by natural processes (e.g., erosion) or anthropogenic activities (e.g., agricultural clearing). Where such degradation has occurred on the Off-site Mitigation Parcel, the compensatory mitigation effort will include restoration or enhancement activities to return those areas to natural xeroriparian or mesoriparian habitat functions and values similar to those of undisturbed areas.

The ephemeral washes and adjoining xeroriparian areas on the Property will continue to provide their existing ecological functions and values (described above) once they are preserved in perpetuity with the appropriate restrictive covenants. Maintenance of these ecological functions and values will be dependent on the active oversight and management of these areas within the larger development area by Whetstone or its successor-in-interest, which eventually will be the homeowners association.

Within the Off-site Mitigation Parcel, the hydroriparian to mesoriparian saltcedar woodland of the active floodplains along the San Pedro River, and active gullies within the mesoriparian mesquite woodland, will be actively controlled and managed in an effort to enhance the density and productivity of native shrubs and trees. Saltcedar will be controlled through an active exotic species removal and maintenance program. The mesoriparian mesquite woodland will be preserved while the adjoining agricultural field will be restored by active revegetation to its former density and composition as mesquite woodland. The spring/wetland complex will be preserved and enhanced via control and active management of exotic saltcedar. The furrow-irrigated agricultural lands will be retired and actively restored to mesoriparian mesquite woodland, similar in composition and density to the adjoining mesquite woodland.

As the revegetated agricultural fields mature, they are likely to assume ecological functions similar to the adjoining mesquite woodland while increasing the patch size of this community within the Off-site Mitigation Parcel. The mesquite bosque was historically one of the most abundant riparian communities in the southwest, but is now reduced to remnant status (Stromberg 1993). Outside the Off-site Mitigation Parcel, abandoned agricultural fields in similar geomorphic settings commonly recolonize with mesquite

naturally, demonstrating the potential for the recovery of this community following disturbance due to agricultural activities.

Arresting the migration of gully headcut erosion on the Off-site Mitigation Parcel will preclude further habitat degradation within the mesquite woodland and allow it to reach its full production potential and functional values. Curbing soil erosion generated from these gullies will also improve downstream water quality and reduce sediment deposition into waters of the U.S.

The preservation, maintenance and enhancement of the artesian spring/wetland complex, a special aquatic site, will provide a perennial water source to wildlife in an area where surface water is limiting. Furthermore, it will ensure the endurance of a plant community that is poorly represented in the region, where most of the perennial wetlands were lost following channel incision and associated groundwater declines in the late 1800s.

The existing functions and values of the habitat types on the Off-site Mitigation Parcel are detailed further along in the following section.

TIME LAPSE BETWEEN JURISDICTIONAL IMPACTS AND EXPECTED MITIGATION SUCCESS

Development of the Project will be incremental over a 20-year build-out period. Therefore, impacts to jurisdictional waters will also occur incrementally over this period. The protection of the Off-site Mitigation Parcel will be immediate. The protection of the avoided jurisdictional washes and the Primary and Secondary Buffers will occur over time in advance of development pursuant to a schedule set forth in the special conditions of the Clean Water Act Section 404 permit. Habitat enhancements resulting from erosion control measures (installation of grade stabilization structures) and protective fencing, saltcedar control, maturation of the mesquite woodland, and active restoration of the agricultural field will also occur incrementally over the span of 20 years. These protection, enhancement, and habitat restoration measures will result in a negligible lapse in time between impacts to jurisdictional waters of the US and successful mitigation.

SPECIAL AQUATIC HABITATS, OTHER WATERS OF THE US AND NON-JURISDICTIONAL AREAS PROPOSED AS COMPENSATORY MITIGATION

Immediately south of the corral and agricultural field in the Off-site Mitigation Parcel is a partially developed artesian spring and associated wetland (0.49 acres) (Figure 2). The spring is outfitted with a 6 inch diameter pipe, ball valve and ¾ inch threaded outlet. Water drips at about ½ gallon per minute (gpm) from the pipe. Saltcedar and Goodding willow grow at the perimeter of the wetland. Alkali sacaton (*Sporobolus airoides*) grows beyond the spring and down gradient of the spring. Evidence of soils with

high percentage organic matter and willows with canopy dieback suggest that the margin of the wetland may expand and contract depending on fluctuations in groundwater recharge to this system.

OVERALL WATERSHED IMPROVEMENTS TO BE GAINED

On the Off-site Mitigation Parcel, erosion control measures will be installed to control active head cut erosion preventing the advance of the gullies, enhancing environmental quality (e.g. reduced sediment discharge to waters of the US), maintaining wildlife habitat and productivity of the mesquite woodlands, and protecting the artesian spring and wetland complex from future degradation.

Preservation of the artesian spring-wetland complex, and the installation of erosion control structures downgradient as a preventive measure, will prevent the loss of rare emergent wetlands in southeastern Arizona.

Preservation of the intermediate age mesquite woodland will promote the development of mature woodland, or bosque, a severely depleted age class of this otherwise widespread community of alluvial floodplains in southeastern Arizona.

Retiring the agricultural field and actively revegetating this area to a similar species composition and density will allow for its recovery to mesquite woodland.

Preserving and maintaining native riparian trees and shrubs in the active floodplain, following the removal of saltcedar, will promote sediment deposition and the aggradation floodplain terraces during overbank flow events. In the absence of catastrophic flooding and erosion, the aggradation of these floodplain terraces will facilitate the succession of these environments to mesquite woodland.

The preservation of 424 acres of waters of the US within the Project Area will maintain the majority of recharge potential within the Project Area, benefiting the San Pedro River xeroriparian habitats within the Project and connectivity of wildlife habitat through the Project.

DESCRIPTION OF THE PROPOSED COMPENSATORY MITIGATION SITE

PROCESS OF SELECTING PROPOSED MITIGATION SITE

Four hundred twenty-four acres of avoided jurisdictional waters of the US within the Project area were automatically included as partial on-site mitigation for impacts to 51 acres of waters of the US subjected to unavoidable discharges of fill. In addition, the Primary Buffer lands were selected based on their proximity to avoided jurisdictional washes. Secondary Buffer lands were additional open space areas along the preserved jurisdictional washes outside the Primary Buffer lands that provide additional natural open space. To further meet compensatory mitigation requirements for the Project, off-site parcels of higher quality habitat and functional values than ephemeral washes were examined for purchase along the San Pedro River within the Upper Basin watershed. A parcel of 144 acres meeting these requirements was identified and purchased from a willing seller. In selecting the Off-site Mitigation Parcel, Whetstone actively sought high-value riparian habitat along the San Pedro River, which through active management, could be enhanced to further offset Project impacts.

LOCATION AND SIZE OF COMPENSATORY MITIGATION SITE

Avoided jurisdictional waters comprising approximately 424 acres within the Property are located within the Township 17 South, Range 20 East Sections 31 through 33 and Township 18 South Range 20 East Sections 3 through 10 and 15 through 18, Gila and Salt River Base Meridian, City of Benson, Arizona. The Primary Buffer and Secondary Buffer lands are approximately 1,200 acres in size and are located within the Property. Combined, the preserved jurisdictional waters and Primary and Secondary Buffers, will total 1,624 acres. The Off-site Mitigation Parcel encompasses 144 acres along the San Pedro River, about 2 miles northeast of the northeastern corner of the Property, within Township 17 South, Range 20 East in the Southeast ¼ of Section 23, Gila and Salt River Base Meridian.

LONG-TERM MANAGEMENT/STEWARDSHIP OF MITIGATION SITE

Whetstone will provide for the protection and management of the Mitigation Lands within the Property and Off-site Mitigation Parcel by making such lands subject to the restrictive covenants in the form attached hereto as Appendix A. Management of the avoided jurisdictional washes, Primary Buffer, and Secondary Buffer will eventually be transferred to the homeowners association.

EXISTING FUNCTIONS AND VALUES OF THE COMPENSATORY MITIGATION SITE

The existing functions and values of the on-site Mitigation Lands (avoided ephemeral washes and associated xeroriparian habitat) are described on pages 3 and 4 of this document. The existing functions and values of ephemeral washes within the Off-site Mitigation Parcel are similar to those of the ephemeral washes on the Property; however, the functions they provide occur at a greater magnitude due in part to the lower gradient of the water courses, finer substrates lining their margins, and the higher productivity of vegetation in closer proximity to groundwater. The washes and gully erosion areas within the Off-site Mitigation Parcel convey flood flows and sediment directly to the San Pedro River. Vegetation lining the river and lower terraces (active floodplains) traps sediment moving downstream during flood events, improving surface water quality. With access to groundwater, nutrients are available to hydro- and mesoriparian vegetation; these constituents are stored in vegetation tissues, further improving groundwater quality. By attenuating flow velocities in normal conditions, streamside vegetation promotes groundwater recharge. Meanwhile, mesoriparian vegetation of upper terraces (abandoned floodplains) slows overland flow in high flood events, promoting the soil moisture inputs to fine sediments with high water holding capacities. Roots of vegetation in near stream and terrace environments control erosion by binding sediment. These high productivity, structurally and biologically diverse plant communities also provide ample habitat and dispersal corridors for wildlife. Finally, hydro- and mesoriparian areas area highly regarded for the educational and recreational opportunities they provide as well as their natural aesthetic.

The vegetation communities on the Off-site Mitigation Parcel vary considerably, depending upon the landform (in particular, stream channel morphology) and the availability of water (surface or ground). Thus, the ecological function of the washes as providing riparian habitat is particularly important. The vegetation characteristics of the active floodplain, abandoned floodplains, agricultural areas, artesian well site, and gully areas of the Off-site Mitigation Parcel are outlined in the following paragraphs. Appendix B provides a collection of photographs depicting existing functions and values of the Off-site Mitigation Parcel.

Active Floodplain

The active floodplain (near stream bars, lower terrace, and secondary terrace) is dominated by meso- and hydroriparian tree and shrub species. Isolated mature Fremont cottonwood and patches of cottonwood and willow grow among dense stands of large saltcedar. Where they occur, mesquite occupies secondary terraces leading up to the pre-entrenchment floodplain. In the southeast corner of the Parcel on the east side of the river is a rabbitbrush- (*Chrysothamnus nauseosus*) dominated open canopy overflow terrace; saltcedar dominate either side of this terrace. Young cottonwood (2-3 inch diameter), saltcedar, and seepwillow (*Baccharis salicifolia*) grow on near stream and instream bars where present. Scattered amongst the trees and shrubs are individual *S. wrightii* and *S. contractus*.

The river is actively aggrading along this reach and the channel appears to be narrowing. Geomorphic landforms near the stream are well vegetated and appear capable of withstanding the most common flow events.

Two rows of erosion control structures (kelner jacks) occur within the channel of the river and the active floodplain near the northern boundary of the Off-site Mitigation Parcel. These structures are linear and consist of steel beams threaded with two crossed steel cables. One line of structures lies within the channel where it is collecting sediment and flood debris. The second line is almost completely covered, except near the confluence of the river at an irrigation tailwater discharge point (described in Agricultural Areas, below).

Although it is not a high quality riparian habitat, exotic saltcedar woodlands (with isolated patches of native riparian trees and shrubs) do provide ecological functions and values for the Off-site Mitigation Parcel. Stands of saltcedar promote streambank stability and sediment retention, successionary processes that will lead to the development of mesquite woodland on terraces of the active floodplain where the existing native plant community is under-represented. Increased fire hazard and groundwater consumption by saltcedar are important drawbacks; however, extensive stands of saltcedar are present up- and downstream of the Off-site Mitigation Parcel making the control of this species a perpetual management responsibility. Areas of the Off-site Mitigation Parcel that may benefit from saltcedar management include locations where the floodplain has aggraded to a point where soil moisture conditions and depth to groundwater currently disfavor saltcedar seedling recruitment.

Under the current hydrologic regime and geomorphic setting, the potential for native hydroriparian trees (Fremont cottonwood and Goodding willow) to replace the extant saltcedar woodland is limited. However, erosion of the active floodplain as a result of flooding, vegetation removal, and subsequent maintenance of a shallow water table, may promote recruitment and establishment of these species. A small stand of young cottonwood lines the river near the upstream end of the Off-site Mitigation Parcel, demonstrating the potential for these conditions along this ephemeral reach of the river. These young trees are growing on recently deposited alluvium, beyond areas currently vegetated with saltcedar.

Abandoned Floodplains

Throughout Arizona, mature mesquite woodlands, or bosques, cover a fraction of the acreage that they occupied in pre-settlement times. The vegetation on undisturbed portions of the abandoned floodplains on the Off-site Mitigation Parcel represents such a bosque. These woodlands provide important avian habitat, and an abundant, nutritious food source for a variety of invertebrates, birds and mammals, and security cover for large wildlife species. Mesquite bosques support very high densities of breeding birds in the southwest, second only to cottonwood-willow forests (Ohmart et al. 1988). Bosques are prime habitat for many mammals, reptiles and amphibians because of the abundance and nutritional quality of foods and the structural complexity of the vegetation (Stromberg 1993).

Currently, the total vegetation volume of the mesquite woodland averages 1.44 ± 0.70 m^3/m^2 with maximum vegetation volumes around 2 m^3/m^2 at selected points (WestLand Resources, Inc. 2005). Average vegetation volume is greatest at 2-4 meters above the ground surface, yet no statistical differences are observed between 0 and 8 meters ($F = 1.8$; df = 8,45; $P = 0.10$) indicating that vegetation volume is well distributed within the canopy of this woodland. Mesquite accounts for 95.5 ± 6.7 percent of the vegetation volume associated with the woodland; graythorn contributes 4 ± 6.7 percent of the total vegetation volume, and catclaw acacia contributes a trace vegetation volume of 0.5 ± 1.2 percent.

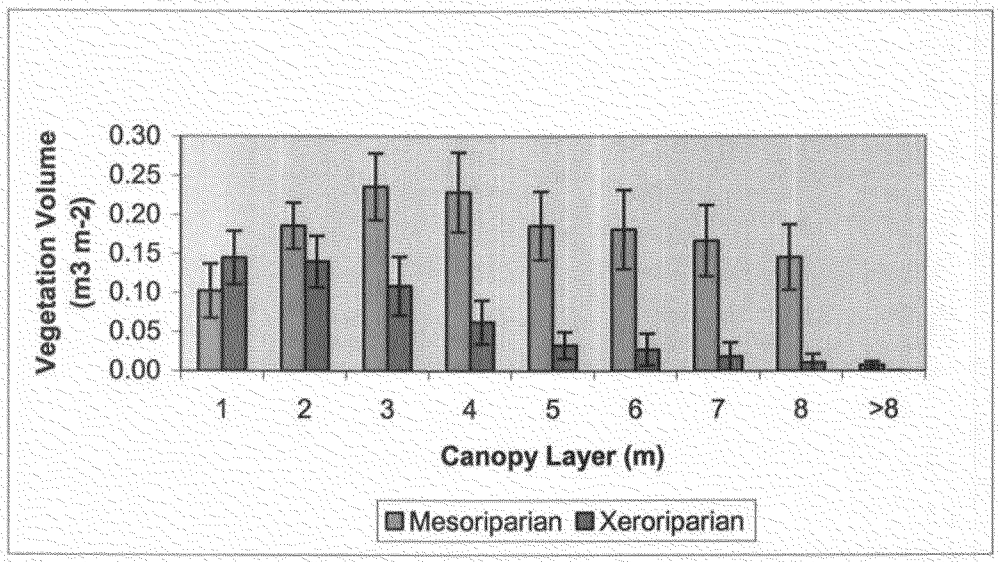
Minimum vegetation volume of the mesquite woodland was measured at 0.52 m^3/m^2 in the severely eroded southwest portion of the Off-site Mitigation Parcel and near the ephemeral wash and corral south of the agricultural fields, another disturbed/lower productivity portion of the site. Values from both locations are within the range of values recorded for xeroriparian vegetation of the ephemeral washes as described below. Opportunities for habitat improvements within these areas may be limited due to sheet erosion and dewatering associated with the extensive gully erosion and the apparent lower water holding capacity of coarser substrates and saline conditions in the vicinity of the agricultural fields. These areas will provide a measure of structural diversity within the larger mesoriparian community of the Off-site Mitigation Parcel.

Average vegetation volume for the mesoriparian habitat at the Off-site Mitigation Parcel is lower than values reported at ten riparian sites along perennial and intermittent streams in Arizona (1.4 ± 0.7 SD versus other riparian mesquite woodlands: 1.8 ± 0.3) (Stromberg et al. 1993). A review of historical aerial photographs and our field observations indicate that portions of the Off-site Mitigation Parcel now occupied by nearly mature mesquite may have been cleared in the past, resulting in the presence of a second- or third-growth mesquite woodland on much of the site which may not yet have reached its potential mature vegetation volume. It should be noted as well that by excluding the vegetation volume of the lower productivity area (southwest corner of the site), 80 percent of the remaining points maintained vegetation volumes within the range reported by Stromberg et al. (1993).

Maximum canopy height of the mesquite woodland on the Off-site Mitigation Parcel is 8.5 meters with an average of 7 ± 1.8 m. This value is similar to values reported by Stromberg et al. (1992) for mesquite woodlands along ephemeral reaches of Tanque Verde Creek in nearby Pima County where maximum height ranged from 7 to 8 meters at moderate to deep groundwater sites (depth 15 meters) (Stromberg et al. 1992). Mesquite trees attained maximum heights greater than 12 meters at Tanque Verde Creek where the water table was less than 6 meters.

The mesoriparian mesquite woodland on the abandoned floodplains of the Off-site Mitigation Parcel contains significantly greater total vegetation volume than the combined xeroriparian habitats of the ephemeral washes on the Property ($t = 0.303$, df = 10, $P = 0.013$). Total vegetation volume was about 2.6 times greater in the mesoriparian mesquite woodland. The distribution of vegetation volume was similar between vegetation types within the first 3 meters; however, the mesoriparian habitat maintained significantly greater vegetation volume than the xeroriparian habitat at heights between 3-5 meters above

the ground surface ($P = 0.05$), as shown in the graph below. Significant differences in vegetation volume at heights above 5 meters were due largely to the poor representation of these strata within the xeroriparian habitats. Within these strata, xeroriparian habitats contributed 10 percent of their total vegetation volume compared to the mesoriparian habitats, which contributed 35 percent of their total vegetation volume to canopy layers between 5 and >8 meters. Substantial differences in maximum canopy height were apparent between the xeroriparian washes (4.8 ± 1.8 m) and mesoriparian woodland (7 ± 1.8 m). Significant differences were detected when the alpha level was set to $P = 0.10$ ($t = -2.14$, df = 10, $P = 0.058$).



Distribution of Vegetation Volume Across Canopy Layers at Mesoriparian and Xeroriparian Habitats of the Mitigation Parcel and the Property, Respectively

The mesquite woodland on the pre-entrenchment terrace may be second- or third- growth throughout most of the Off-site Mitigation Parcel, judging by its intermediate stature and the apparent evidence of land clearing visible in 1992 aerial photographs. About 10 acres of mesquite woodland, located near the river and along the railroad grade southeast of the agricultural fields, is of larger stature and maintains an understory of scattered graythorn (*Ziziphus obtusifolia*) and big sacaton (*Sporobolus wrightii*).

Mesquite scrubland occupies the southwest corner of the Off-site Mitigation Parcel's abandoned floodplains. Pre-1900 and active gully erosion, piping, and sheet erosion may have contributed to lower productivity in this area. Mesquite is widely distributed with four-wing saltbush (*Atriplex canescens*), crucifixion thorn (*Koeberlinia spinosa*), and broom snakeweed (*Gutierrezia sarothrae*) growing between and beneath the mesquite. In contrast to other mesquite areas on the Off-site Mitigation Parcel, there is little growth of herbaceous annuals and leaf litter in shrub interspaces.

Agricultural Areas

Two agricultural fields covering about 22 acres occupy the northwest portion of the Off-site Mitigation Parcel. Sudangrass (*Sorghum sudanese*) is furrow irrigated from west to east across the fields by a diesel-powered pump and well located outside the Parcel on adjacent agricultural land. Water is delivered by a subsurface irrigation system at regularly spaced gate valves along the western boundary of the fields. The neighbor to the north, who has a "handshake" lease agreement with the owner, is actively farming these fields. The sudangrass is mechanically harvested and baled for winter-feed (1 cutting per season) and periodically grazed by about 45 head of cattle.

Irrigation tailwater discharges from the southeast corner of the fields into the adjoining mesquite woodland, discharging to the San Pedro River. An active erosion headcut is moving upgradient from the river towards the agricultural fields and nearby artesian well and wetland (described below), posing a potential future threat to the infrastructure of the agricultural fields and spring-associated wetland.

There is a cleared area immediately south of the agricultural fields with access to irrigation from a gate valve at the corral in the southwest corner of the south field. Another cleared/disturbed area southwest of the corral is likely a result of vegetation clearing and vehicular activity. These disturbed areas comprise a combined 2.23 acres of the Off-site Mitigation Parcel.

Barbed wire fences line most of the Off-site Mitigation Parcel and agricultural fields. No fencing is apparent in the active floodplain or along pre-entrenchment terrace lining the west side of the river.

Artesian Well

Immediately south of the corral and agricultural fields on the Off-site Mitigation Parcel is a partially developed artesian spring and associated wetland (0.49 acres). The spring is outfitted with a 6 inch diameter pipe, ball valve and ¾ inch threaded outlet. Water drips at about ½ gpm from the pipe. There is no electricity at this location. Saltcedar and Gooding willow grow at the perimeter of the wetland. Alkali sacaton grows beyond the spring and downgradient of the spring. Evidence of soils with high percentage organic matter and canopy dieback on willows indicates that the wetland has contracted from its original extent.

Gullied Areas

Pre-1900s gully erosion is widely distributed throughout the Off-site Mitigation Parcel. The pre-1900 gullies are largely healed as evidenced by vegetation growth in their bottoms and gently sloped banks. Some of these gullies are undergoing a second round of incision with active headcuts in evidence. Mature saltcedar lines the bottoms of these actively eroding areas. With the exception of the tailwater example above, nearby offsite residential development and agricultural activities and/or changes overall watershed condition may be contributing to this phenomenon via two large washes that discharge across the site.

JURISDICTIONAL DELINEATION

Formal delineation of waters of the US has not been conducted on the Off-site Mitigation Parcel; however, at least 6.7 acres of river channel and ephemeral wash were identified from recent low-level aerial photography. Additional jurisdictional waters of the US are present within the active gully erosion areas of the Off-site Mitigation Parcel; however they cannot be accurately delineated from aerial photographs. On-site evaluation of the gully erosion areas will likely increase the acreage of jurisdictional waters preserved within the Off-site Mitigation Parcel.

PRESENT AND PROPOSED USES OF THE COMPENSATORY MITIGATION SITE AND ALL ADJACENT AREAS

On-site Mitigation Lands

Present Uses – The on-site area comprising the Mitigation Lands (avoided jurisdictional waters of the US and adjacent xeroriparian habitat) are presently used by livestock for grazing within the Chihuahuan desertscrub and semidesert grasslands of the Property.

Adjacent Areas – The area adjacent to the avoided jurisdictional waters of the US and associated, preserved xeroriparian habitat within the Property will largely be developed to low and moderate density residential land uses. Commercial development will occur primarily within ¼ mile of SR 90.

The Coronado National Forest abuts SR 90 on the western boundary of the Property. Most of the southern boundary is a combination of private and Arizona State Land Department (ASLD) property. Section 27, 28, and 34 along the northeastern border of the Property is also ASLD property. Lands to the north of the Property are a combination of privately held and ASLD properties. The eastern boundary of the Property, to the San Pedro River, is private land with a small in-holding of ASLD property in Section 2.

Proposed Uses - The on-site Mitigation Lands will be maintained as natural open space with restrictive covenants placed on their land use. These areas will primarily provide for flood flow conveyance and groundwater recharge, migration and dispersal for wildlife, and passive recreational and educational opportunities for local residents with the restrictions outlined above.

Off-site Mitigation Parcel

Present Uses – The Off-site Mitigation Parcel includes both agricultural use and natural areas. Two agricultural fields covering about 22 acres occupy the northwest portion of the Off-site Mitigation Parcel. Sudangrass (*Sorghum sudanese*) is furrow irrigated from west to east across the fields by a diesel-powered pump and well located outside the Off-site Mitigation Parcel on adjacent agricultural land. Water is delivered by a subsurface irrigation system at regularly spaced gate valves along the western

boundary of the fields. The neighbor to the north, who has a handshake lease agreement with the current owner, is actively farming these fields. The Sudangrass is mechanically harvested and baled for winter-feed (1 cutting per season) and periodically grazed by about 45 head of cattle.

The remainder of the Off-site Mitigation Parcel is presently in a natural state that consists of mesquite-dominated mesoriparian woodland and an artesian spring/wetland complex on the abandoned floodplain, and saltcedar-dominated hydroriparian community along the active floodplain of the San Pedro River.

Adjacent Areas – Land uses of the bottomlands to the immediate north and northeast are a combination of irrigated agriculture and riparian woodlands similar to those on the Off-site Mitigation Parcel. Bottomlands to the south and southeast are largely natural open space consisting of riparian woodlands similar to those present on the Off-site Mitigation Parcel. The northern extent of the San Pedro Riparian National Conservation Area lies about 1-½ river miles to the north or upstream of the Off-site Mitigation Parcel.

Other nearby landowners maintain their land in a combination of natural open space and orchard agriculture. Recent aerial photographs show the orchards covering small acreages. The natural open space may or may not be grazed by livestock. Activities on these lands, residential and commercial development, and/or vegetation changes within the larger watershed are increasing overland flow and discharges to ephemeral drainages that flow across the Off-site Mitigation Parcel. Increased flow velocities during storm events are promoting active headcutting of gullies on the Off-site Mitigation Parcel, as described above.

Proposed Use – Active gullies within the Off-site Mitigation Parcel will be actively managed with the installation of grade stabilization structures. Saltcedar will be removed and managed along lower terraces near the river and active gullies within the mesquite woodland. The agricultural fields will be retired and actively restored during the 20-year build-out period of the Project. Aside from these management activities, Whetstone or a designated land steward will manage the Parcel as a natural preserve within the constraints placed on its land use in perpetuity through restrictive covenants.

REFERENCE SITE(S)

Quantitative measures of production potential of the mesquite woodland have not been established for the Off-site Mitigation Parcel. Potential reference sites exist within ephemeral reaches of the nearby San Pedro River National Conservation Area that will allow for the determination of these measures. Mature mesquite woodlands within the San Pedro River National Conservation Area could be used to establish benchmarks of productivity potential for this vegetation community. Guidelines for establishing success criteria for the grade stabilization structures have been published in the National Engineering Handbook, Engineering Field Manual, and Conservation Practice Specifications for Arizona (Natural Resources Conservation Service 2002, Soil Conservation Service 1984a, 1984b, 1989).

IMPLEMENTATION PLAN FOR THE MITIGATION LANDS

The on-site Mitigation Lands (avoided jurisdictional waters of the US and associated xeroriparian habitat) will be maintained in a natural condition and preserved via restrictive covenants; habitat establishment, restoration, or enhancement of these areas is not planned.

Habitat restoration is planned for the Off-site Mitigation Parcel. The following paragraphs outline the implementation plan for restoration of specific degraded or disturbed areas.

Active headcut erosion within many of the pre-1900s gullies is an on-going problem contributing to habitat degradation and water quality concerns. Recontouring and armoring the slope of the headcuts will stabilize the active headcuts. With these treatments, the gullies will naturally heal over decades until they attain a new equilibrium. Active management of the headcut erosional areas will preclude future advancement of these features, thereby avoiding further degradation of the mesquite woodland and water quality downstream.

The artesian spring and wetland complex will be enhanced and protected via erosion control measures at the tailwater gully/headcut (described above). A newly constructed interior barbed wire fence will provide protection to the wetland and surrounding area in the event that cattle trespass onto the parcel.

External fence improvements will reduce unwanted grazing by livestock, and potentially reduce the volume of illegal immigration passing through the Off-site Mitigation Parcel. Removal of any internal fences will eliminate unnecessary hazards to wildlife and improve the overall aesthetic of the Off-site Mitigation Parcel. Trash piles are scattered intermittently throughout the Off-site Mitigation Parcel, largely as a result of traffic from illegal immigration. Trash removal will be conducted on a regular basis in association with fence line monitoring and repairs.

The farm fields will be retired and actively revegetated to mesquite woodland. The corral and associated outbuilding will be removed to improve the natural aesthetic of the Off-site Mitigation Parcel, unless they are deemed useful as storage facilities for active management activities. Natural recovery and active revegetation of area around the corral will increase the acreage of mesquite woodland within the Off-site Mitigation Parcel. This area is likely compacted, which may require ripping of the soil to improve the hydraulic conductivity of the soil and root penetration by recolonizing vegetation. Natural recovery and active revegetation of the disturbed area immediately south of agricultural fields will lead to an increase in the acreage of mesquite woodland.

Agricultural tailwater discharges to the river will be eliminated when the fields are retired. The advancing headcut erosion areas will be stabilized after preliminary fluvial geomorphic, watershed, and engineering evaluations have been completed. The appropriate technique for stabilizing these active headcuts will be

generated from an approved technique(s) described in the references provided in the previous section. Treating these problems will remove or reduce the problems described above. In addition, stabilizing the gully will protect the long-term integrity of the artesian wetland about 30-50 meters upgradient of an advancing headcut.

Exotic species (saltcedar) present within the Off-site Mitigation Parcel will be managed by a combination of manual and mechanized removal, supplemented with herbicide application. Details of the proposed management techniques are provided in the Site Preparation section below. Removal of exotic species will allow for the natural regeneration of native species, such as cottonwood and willow, which are currently out-competed by saltcedar. Re-establishment of the native species will result in higher quality habitat along the river.

RATIONALE FOR EXPECTING IMPLEMENTATION SUCCESS

Implementation of this plan on the on-site Mitigation Lands consists of recordation of restrictive covenants as required by the special conditions. Given the straightforward nature of this obligation, compliance with the special conditions and restrictive covenants is expected.

The nature and type of habitat to be restored is generally similar in structure to the mesoriparian habitats that exist along similar geomorphic landforms outside the Off-site Mitigation Parcel on adjoining private lands and nearby San Pedro Riparian National Conservation Area. The basic natural processes that support mesquite woodland are still in place (e.g., depth to groundwater, hydrology, and soils). The primary factor affecting the productivity potential of the mesquite woodland on the Off-site Mitigation Parcel is time since disturbance. In the absence of future disturbance (e.g., fire), the mesquite woodland will achieve its potential.

Successful restoration of the farm fields to mesquite woodland is expected because the adjoining mesquite woodland has largely recovered from its prior disturbance state following land clearing.

By following guidelines and specifications set forth by the Soil Conservation Service and the Natural Resources Conservation Service in Arizona, we expect to successfully curtail headcut erosion, which will prevent further habitat degradation in the southwestern portion of the Off-site Mitigation Parcel. Productivity within the mesquite woodland will be stabilized and enhanced as the gullies heal over time. Although the potential exists for these structures to fail, causing further erosion, active monitoring and maintenance will reduce the probability of occurrence. Any structures that fail will be reinstalled at the most suitable location for achieving future success.

Exotic species removal programs have been successful in a number of similar environments, but continued success requires ongoing management (5 years, +/-) to ensure that native species are fully established. Successful management programs have included several control sessions (4-6) per year, to

remove re-sprouts, combined with annual vegetation measurement to monitor the volume and proportion of exotic and native species. Adjustments to the control program can be made in the event that the monitoring efforts determine that control is unsuccessful.

RESPONSIBLE PARTY

All phases of the implementation plan for the Mitigation Lands will be the responsibility of Whetstone, subject to transfer as provided in the restrictive covenants.

SCHEDULE

Recordation of restrictive covenants will be governed by the schedule set forth in the special conditions. Whetstone, contractors, or land stewards will implement the excavation, grading, and construction activities to restore proper slope and channel morphology of sites with active gully erosion on the abandoned floodplain within the Off-site Mitigation Parcel. At no time will heavy equipment be operated in the river. Whetstone (or a designated party) plans to initiate these erosion control measures shortly after the Corps issues a permit for the proposed action (the Project).

SITE PREPARATION

Gully Repair

At the Off-site Mitigation Parcel, site preparation activities will focus on grading, excavation, and construction of erosion control structures at active headcuts, and boundary and interior fence removal and construction. Excavation and grading activities will be necessary to reestablish an appropriate channel slope and dissipate the energy of overland and flood flows to gullies. To the extent possible, excavated material will be retained on site: any excess materials will be removed from the site and properly disposed. Prior to initiating earthmoving activities within the Off-site Mitigation Parcel, temporary clear-limit fences will be constructed at key locations to protect nearby native vegetation. Accessing some gullies with heavy equipment may require selective cutting and trimming of vegetation en route to the sites. Efforts will be made to minimize impacts to extant vegetation.

The existing barbed wire fence will be removed and waste materials will be disposed at an appropriate disposal site. New four-strand barbed wire fence, bottom strand barb-less, will then be constructed along the perimeter of the Off-site Mitigation Parcel to provide a means of protection from unauthorized vehicular access, illegal dumping, and wood cutting, and to limit access to livestock and illegal immigration. Due to the maintenance requirements and safety concerns, fencing will not be placed across the river at upstream and downstream locations or along the margins of the abandoned floodplain on both sides of the river (Figure 3).

Active Restoration of the Agricultural Fields

Planting Plan

Active restoration of the agricultural fields (22 acres) within the Off-site Mitigation Parcel will be accomplished by planting a combination of container-grown plants and direct seeding trees, shrubs, and grasses common to the adjacent mesquite woodland (e.g. velvet mesquite, graythorn, four-wing saltbush, and big sacaton) (Figure 4). Plants will be installed in a randomized fashion at densities approximating those of the nearby mesquite woodland. The current conceptual plan assumes that approximately 3,300 trees and shrubs will be planted across the agricultural areas on the Off-site Mitigation Parcel, providing a density of about 150 trees per acre. Stromberg (1993), summarizing other studies from Arizona, reported that high density mesquite woodlands are composed of 200-800 individuals per hectare or 80-325 plants per acre), values in line with our proposed planting densities for the agricultural areas.

Irrigation Plan

Either flood or drip irrigation will be utilized to establish the containerized plants and seeds. Where practical, the existing irrigation delivery system will be used to water the restored fields. Modifications may include the construction of a channel from the adjacent off-site, or newly installed irrigation well, and the construction of berms to evenly distribute water across the revegetated area. In the event that flood irrigation proves to be an unsuitable alternative, a drip irrigation system using pressure-compensating emitters may be installed to deliver water to planted trees and shrubs. Seeds of trees, shrubs, and grasses sown on the revegetation area would meet their moisture requirements via ambient rainfall or drip irrigation associated with planted trees and shrubs. A properly functioning irrigation system will be in place prior to tree and shrub planting and direct seeding of the agricultural fields.

Exotic Riparian Tree Removal and Control

Background

Saltcedar, a species native to the Mediterranean region, was first introduced to North America as an ornamental plant in the early 1800s, and subsequently used as a windbreak or for erosion control (particularly along watercourses). This species has since naturalized over a wide portion of North America and, since the 1920s, has spread rapidly along watercourses in the southwest. In many areas of the southwest, it has nearly replaced native riparian trees.

Because it has a wide distribution in the southwestern US and has reached problematic densities in numerous localities, there is extensive literature concerning the eradication and control of saltcedar. The following provides a discussion of proposed control methods for saltcedar at Off-site Mitigation Parcel along the San Pedro River.

The selection of control methods for saltcedar depends on the plant placement and density within the site. Four general methods have been used extensively in an attempt to control saltcedar:

1) prescribed fire
2) mechanical destruction using heavy equipment
3) mechanical destruction using hand tools
4) herbicides

A fifth method, biological control, is being tested in several western states, but has not yet been approved for use in the state of Arizona. Fire alone has generally been ineffective as a control method for saltcedar, as the plant is more fire-tolerant than many native species. Mechanical control with heavy equipment has met with mixed results as a control method for saltcedar; it is expensive and often causes damage to non-target plants. Mechanical control with hand tools can be effective, but it is labor intensive and is best suited for small areas. Herbicides have had mixed results with effectiveness being dependent on the choice of herbicide, application method and dosage among other factors.

Removal and Control Techniques

One of two methods may be employed, as appropriate, within the Off-site Mitigation Parcel: 1) cut stump/herbicide application, and 2) mechanized control. Based upon our current understanding of this system, the first method is preferred and may be all that is required to achieve the desired control levels. Removal and control will occur through the monitoring and reporting period.

Cut-stump/Herbicide Application

In most areas, saltcedar grows in close proximity to or in association with native species or near open water. In the areas not in proximity to open water, we recommend the "cut-stump" method for control. Under this method, tree trunks are cut horizontally at ground level using chainsaws, pruning saws, and loppers. Cutting is immediately (within 30 seconds) followed by application of a 2:1 mixture of water and Garlon 4®. A dye is added to the herbicide mixture to clearly differentiate between stumps that have been treated and those in need of herbicide application. Plant material (slash) is collected, piled, and burned at an appropriate site. In areas where saltcedar grows in or near water, the same procedures are followed, except that full-strength Rodeo® (aquatic-approved) is applied to cut stumps.

Mechanized Removal

Based on a review of the literature, site visits, and experience in areas where saltcedar grows in large, single-species patches requiring control and removal, mechanical destruction may be the best solution. Combinations of bulldozing, root-plowing, and eventual burning of debris may be used to clear the area of vegetation. These techniques delay and reduce the need for herbicide treatment as part of the control effort.

Since the purpose of this exotic removal is to encourage regeneration and production of native riparian vegetation, it is essential that areas requiring mechanical control are cleared immediately and the slash burned at an approved site as soon as the material is dry enough to support fire. Exposing roots during clearing activities aids in their desiccation, but branches and roots in contact with, or covered by moist soil, may resprout. Therefore, dragging of heavy raking equipment may be required to ensure that the bulk of these branch and root remnants are collected for burning.

Maintenance and Long-term Control of Exotic Tree Species

Foliar sprays vary widely in effectiveness, but most herbicides applied to short stumps (less than 2 cm above ground) immediately after cutting have proven to be about 100 percent effective. However, some regrowth from roots and stems, as well as new seedling establishment, is expected. A maintenance program will be needed to assure that saltcedar densities remain low enough for native plant species to gain and maintain a competitive advantage. The maintenance program will include bi-annual (early and late growing season) reconnaissance and maintenance of the treated areas. Resprouts of saltcedar observed during these visits will be pulled by hand, or cut, and stumps will be treated with the appropriate herbicide. Spot treatment of resprouting saltcedar will be necessary for a minimum of five years.

AS-BUILT CONDITIONS

All of the Mitigation Lands will be under the protection of restrictive covenants. The Off-site Mitigation Parcel will receive new perimeter and interior fences protecting the artesian spring/wetland complex (a special aquatic site) and the naturally recovering agricultural fields. The agricultural fields and nearby disturbed areas will be restored to their prior condition, mesquite woodland, and connect with the woodland to the immediate south. The erosion control features will reduce or eliminate active gully erosion migrating through the Off-site Mitigation Parcel, which will preclude further habitat degradation and facilitate the maturation of the existing intermediate age mesquite woodland to mature woodland with a closed canopy.

The as-built condition of the erosion control structures and plantings within the agricultural fields will be certified by a professional engineer and/or Landscape Architect as appropriate and submitted to the Corps within 45 days of fully implementing these efforts. The Corps will inspect the newly constructed boundary and interior fences of the Off-site Mitigation Parcel within 45 days of completion, or elect to receive proof of the as-built condition of the fences by way of photographic documentation, receipts and written description of the work accomplished.

MAINTENANCE ACTIVITIES DURING THE MONITORING PERIOD

MAINTENANCE ACTIVITIES

The following maintenance activities will occur on the Mitigation Lands:

1. Inspection and repair fences at Off-site Mitigation Parcel, as required;
2. Inspection of grade control structures for eroded areas at the Off-site Mitigation Parcel, and reparations, as required;
3. Inspection of ephemeral washes and the designated wildlife movement corridor within the Property for unauthorized off-road vehicular activity and treatment of problem areas, as required; and
4. Inspection and removal of trash and debris that collect on the Mitigation Lands.

RESPONSIBLE PARTY

Whetstone, contractors, or designated land stewards will make routine inspections and address management issues in the ephemeral washes and wildlife movement corridor within the Mitigation Lands. Whetstone, contractors, or designated land stewards will perform the removal of existing dilapidated fences, installation and maintenance of new boundary and interior fences, and design and install the erosion control structures within the Off-site Mitigation Parcel. Maintenance, repairs, and replacement of the fences will take place in perpetuity. Maintenance and repair of the erosion control structures will occur as needed over the 5-year monitoring period.

SCHEDULE

Whetstone, contactors, or land stewards employed for these tasks will inspect and repair fences, and remove trash and debris within the Off-site Mitigation Parcel on a quarterly basis. Inspection and repair of the erosion control structures will take place on a monthly basis during the summer and winter rainy seasons (July-March). Inspection and control of unauthorized vehicular access of the protected ephemeral washes within the Mitigation Lands will occur for all washes during each quarter of the year in perpetuity.

MONITORING PLAN FOR COMPENSATORY MITIGATION SITE

PERFORMANCE STANDARDS FOR TARGET DATES AND SUCCESS CRITERIA

Target Functions and Values

The avoided jurisdictional washes will continue to provide their existing ecological functions and values (described above) once they are preserved in perpetuity with the appropriate restrictive covenants. Maintenance of these functions and values (e.g. flood flow conveyance and groundwater recharge, migration and dispersal for wildlife) will be dependent on the active oversight and management of these areas within the larger development area by Whetstone or designated land stewards.

Similarly, the associated xeroriparian habitat, preserved within the Primary and Secondary buffer zones, will continue to provide the existing ecological functions and values once they are preserved in perpetuity with the appropriate restrictive covenants. Maintenance of these functions and values will likewise be the responsibility of Whetstone or designated land stewards.

Within the Off-site Mitigation Parcel, the functions and values of the primary vegetation habitats (mesquite woodland, agricultural fields, and artesian spring/wetland complex) will be maintained and enhanced through acquisition of and preservation of the land via restrictive covenant and through the active restoration of the site by the removal and control of saltcedar and plantings of native trees and shrubs in the existing agricultural fields.

Preservation of the mesquite woodland on the Off-site Mitigation Parcel, and protections gained from actively controlling headcut erosion, will promote the woodland's maturation to a closed canopy. Mature mesquite woodlands, or bosques, cover a fraction of the acreage that they occupied in presettlement times. These woodlands provide important avian habitat, and an abundant, nutritious food source for a variety of birds and mammals, and security cover for large wildlife species.

The retired agricultural fields will be actively restored to establish a mesquite woodland. The adjoining mesquite woodland has recolonized the area it occupied prior to land clearing. In time, these retired agricultural fields will provide the functions and values of the adjacent mesquite woodland.

Arresting the migration of gully headcut erosion on the Off-site Mitigation Parcel will preclude habitat degradation within the mesquite woodland and allow it to reach its production potential and values as described above. Curbing soil erosion generated from these gullies will also improve downstream water quality and reduce sediment deposition into waters of the U.S.

The preservation, maintenance, and enhancement of the artesian spring/wetland complex will provide a perennial water source to wildlife an area where surface water availability is the limiting resource. Furthermore, these activities will ensure the endurance of a plant community that is poorly represented in the region, where most of the perennial wetlands were lost following channel incision and associated groundwater declines in the late 1800s.

Total vegetation volume for the xeroriparian sites on the Property that are supported by the ephemeral flows through the jurisdictional waters in the project area are 0.54 ± 0.16 m^3/m^2 (WestLand Resources, Inc. 2005) while those of the mesquite woodland habitats within the Offsite Mitigation Parcel are 1.4 ± 0.7 m^3/m^2, an approximately 2.6-fold difference. The Offsite Mitigation Parcel will provide 144 acres of preserved/restored habitat that, at maturity, will support vegetation community with approximately 2.6 times the volume of vegetation found associated with the waters of the U.S. on the Property. Both the size of the Off-site Mitigation Parcel and the increased productivity of the habitats on this site provide sufficient compensation for potential impacts to the waters of the US on the Property and associated impacts to lost functions and values that will result from the implementation of the Project.

Target Hydrological Regime

The target hydrological regime for the Mitigation Lands (both on-site and at the Off-site Mitigation Parcel) is the current condition, excepting the headcut gullies, which will be actively managed. Negligible changes to the hydrological regime are anticipated as a result of activities associated with the compensatory mitigation effort. Restoration of the gully areas will not significantly change the hydrologic regime, but will restore it to a natural condition.

Target Jurisdictional and Non-Jurisdictional Areas to be Established, Restored, Enhanced, and/or Preserved

The on-site Mitigation Lands, including both avoided jurisdictional and non-jurisdictional areas (1,624 acres total), will be preserved by restrictive covenants.

Within the Off-site Mitigation Parcel, the artesian spring and wetland complex (assumed jurisdictional area of 0.49 acres) will be protected from inadvertent livestock grazing. Harnessing the advancing gully headcut down gradient of the spring with grade control structures also will preserve and prevent future degradation of this special aquatic site.

The intermediate aged mesquite woodland on the Off-site Mitigation Parcel will be allowed to further develop into more productive mature mesquite woodland on about 77 acres of non-jurisdictional area, with preservation and erosion control habitat enhancement measures.

The mesquite scrubland in the southwestern portion of the Off-site Mitigation Parcel will likely remain unchanged at 7.1 acres of non-jurisdictional area, even with stabilization of the headcuts. The productivity of this area is either affected by long-term sheet erosion, soil moisture reductions due to the redirection of subsurface moisture towards the headcuts, or inherent soil conditions.

Retiring the agricultural fields and actively restoring them to mesquite woodland habitat type will increase the extent of this vegetation community by about 22 acres of non-jurisdictional area on the Off-site Mitigation Parcel, in addition to reducing habitat fragmentation of this riparian community along this reach of the river.

Disturbed areas to the south of the agricultural fields and corral on the Off-site Mitigation Parcel will also be actively revegetated to facilitate the establishment of mesquite woodland or scrubland (2.2 acres of non-jurisdictional area). The potential for recovery of these sites may be affected by past activities in the area, which may have compacted the soils, or saline soils extending from the adjacent artesian spring/wetland complex.

Exotic species present along the active floodplain within the Off-site Mitigation Parcel will be removed, as described above, and native vegetation will be allowed to regenerate. The total area currently impacted by exotic species is estimated at 26.5 acres; this entire area would be subject to the control effort.

MONITORING METHODS

Operation and Management Monitoring

All phases of operations and management monitoring of the Off-site Mitigation Parcel, and the ephemeral washes and designated wildlife movement corridor within the on-site Mitigation Lands, will be the responsibility of Whetstone subject to transfer as provided in the restrictive covenants.

Human Use and Impact Assessment

During each of the fence line inspections on the Off-site Mitigation Parcel, and general inspections of the on-site Mitigation Lands, the inspector shall make note of development of trails or other human uses such as illegal dumping, camping, or other human activities that adversely affect ecological functions. The problems encountered and the corrective actions taken to address them will be summarized in the annual monitoring report.

Maintenance Monitoring and Repair of Erosion Control Structures

During each inspection of the erosion control structures on the Off-site Mitigation Parcel, the inspector shall make note of any problems that may cause the structures to fail and address them as soon as practicable. As noted above, inspections will take place on a monthly basis during the winter and summer

rainy seasons when the structures are most likely to receive flood flows and require repairs. The problems encountered and the corrective actions taken to address them will be summarized in the annual monitoring report.

Ecological Functions & Values Monitoring

Woody Vegetation Density and Composition

Woody Vegetation Sampling

Stratified plots will be established within the revegetated agricultural fields and the extant mesquite woodland south of the fields on the Off-site Mitigation Parcel. These plots will be 5 x 20 meters (16 x 65.5 feet) plots (long axis parallel to the stream). About 50 plots each will be established within the agricultural fields (5 percent of the acreage of the agricultural fields) and mesquite woodland. Stem density and basal diameter by woody plant species will be measured. Vegetation sampling and analysis will take place each year for five years to track the progress of the restoration effort on the agricultural fields relative to baseline stem densities and species composition of the mesquite woodland. Measurements will be made during the first year at plots within the agricultural fields and mesquite woodland. Sample plots within the agricultural field will be permanently marked to facilitate resampling efforts. After the first year, plots will be sampled only from the agricultural fields.

In the event mortality of the planted trees and shrubs within the restoration field exceeds 20 percent of the planted plants, contingency measures will be put into place to determine and correct the cause. Contingency measures may entail supplemental irrigation and supplemental seeding and/or planting efforts to replace dead individuals.

Saltcedar Monitoring

The success of saltcedar control on the Off-site Mitigation Parcel will be measured during annual monitoring. To document the effectiveness of control measures, Point-centered Quarter (Cottam and Curtis 1956) transects will sample the saltcedar treatment areas. Transect placement decisions will be made in the field. At each sampling interval, the closest tree or shrub species within each of four quarters will be recorded along with its basal diameter size class (<2.5 cm, 2.5-5 cm, 5-15 cm, and >15 cm). In addition, the number of seedlings within a 1-meter diameter circle of the sample point will be recorded by species. Transects will be marked clearly with PVC pipe over rebar, and GPS coordinates recorded, at each turning point to aid resampling efforts during subsequent monitoring years.

Photographic Documentation

A collection of photographic images will be made of the vegetation sample plots throughout the 5-year monitoring period to supplement the quantitative monitoring efforts implemented at the retired agricultural fields and mesquite woodland of the Off-site Mitigation Parcel. Photographs will be taken at

yearly intervals that correspond with quantitative measures to provide visual documentation of habitat development.

MONITORING SCHEDULE

The schedule provided is for a 5-year monitoring period. Human Use and Impact Assessment will occur at least once per quarter throughout the 5-year monitoring period. Generally, the Ecological Function and Values Monitoring and Photographic Documentation will be based upon the following:

- *Wood Vegetation Density and Composition.* This will occur in each of the sampling years outlined above. Sampling will occur at the end of the monsoon rainy season (September-October).

- *Photographic Documentation.* Permanent photo points will be established during the first year of operations at the time that vegetation sampling plots are installed on the agricultural fields. Baseline photographs will be taken from vegetation sample plots within the mesquite woodland and restored agricultural fields during the first year. Photographic documentation will be completed annually throughout the 5-year monitoring effort.

ANNUAL MONITORING REPORTS

By the end of the fourth quarter of each year, three copies of an annual report will be submitted to the Corps that will describe the current state of each mitigation area and summarize the maintenance and monitoring efforts completed during the reporting year as required by this Habitat Monitoring and Mitigation Plan. Annual monitoring will be ongoing until all sites have met the established success criteria or for a period of eight years, whichever is greater. The monitoring reports will not be exhaustive, but will summarize the maintenance and monitoring activities of the current year. The reports will transmit information gathered as required by this monitoring plan in a form and fashion that allows the Corps to make informed determinations about the success of protection, enhancement and restoration efforts on the Mitigation Lands.

COMPLETION OF COMPENSATORY MITIGATION

NOTIFICATION OF COMPLETION

Whetstone, a designated contractor, or the land steward will provide written notification of completion to the appropriate representative of the Corps' Los Angeles District.

AGENCY CONFIRMATION

The compensatory mitigation will not be considered complete until the appropriate representative of the Corps' Los Angeles District confirms that it is complete, based upon review of the monitoring reports and/or during site inspection.

CONTINGENCY MEASURES

INITIATING PROCEDURES

Success and/or failure to achieve the objectives identified for the Mitigation Lands will be detailed in the yearly monitoring reports submitted to the Corps. In these reports, Whetstone, designated contractors, or land stewards will identify the degree to which success has been achieved, the likely cause of any failure and, if necessary, propose alternative measures for achieving mitigation success. Should contingency measures become necessary, the responsible party (or designee) will schedule a meeting with the Corps to develop alternative measures and an implementation schedule for achieving successful mitigation.

ALTERNATIVE LOCATIONS FOR CONTINGENCY COMPENSATORY MITIGATION

The mitigation actions set forth in previous sections, particularly those of the gully erosion control structures, are not likely to require the utilization of alternative mitigation locations as long as prescribed regional and national engineering specifications and guidelines are followed during construction and maintenance.

RESPONSIBLE PARTY

Completion of the compensatory mitigation plan for the on-site and off-site lands will be the responsibility of Whetstone, subject to transfer as provided in the restrictive covenants.

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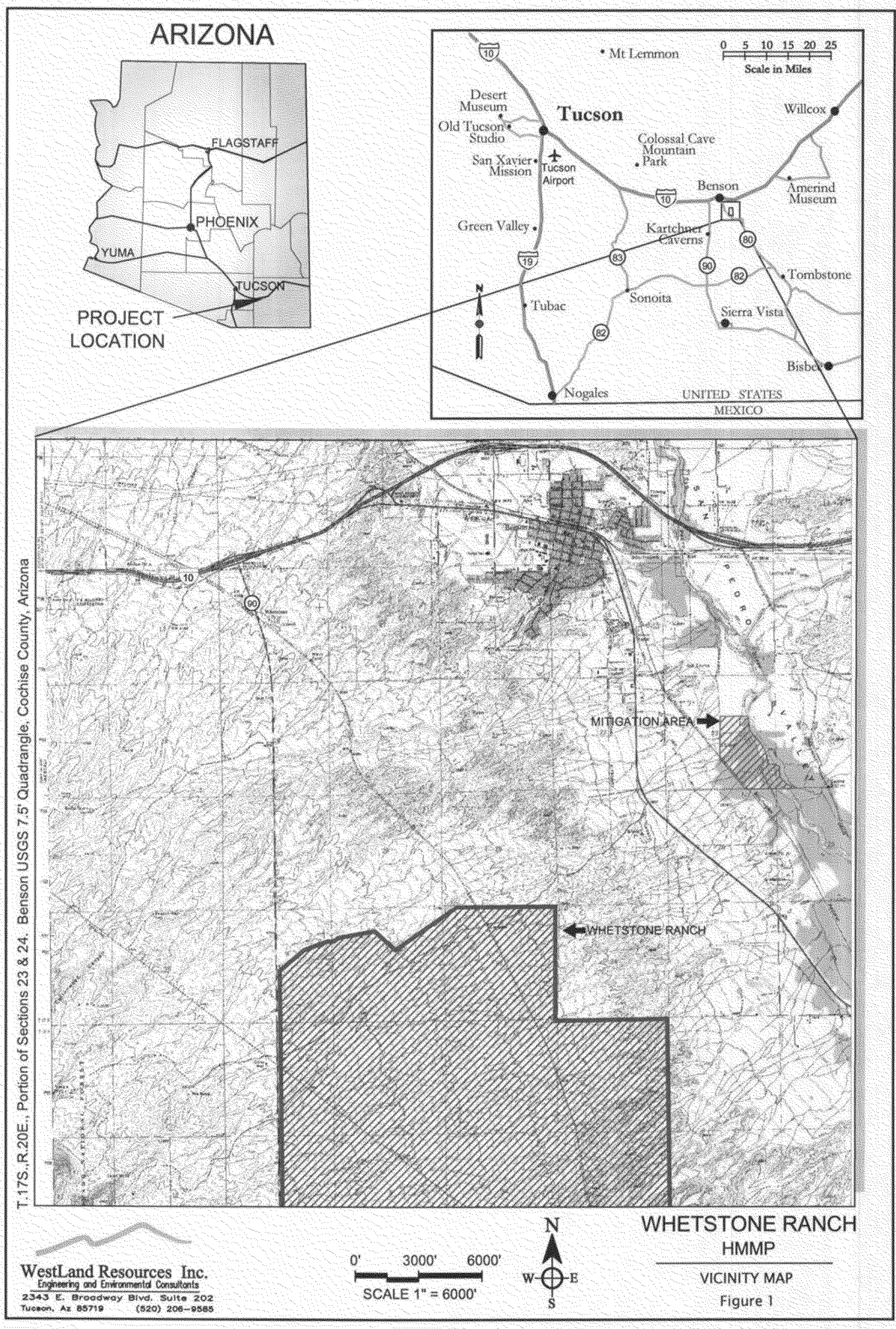
FIGURES



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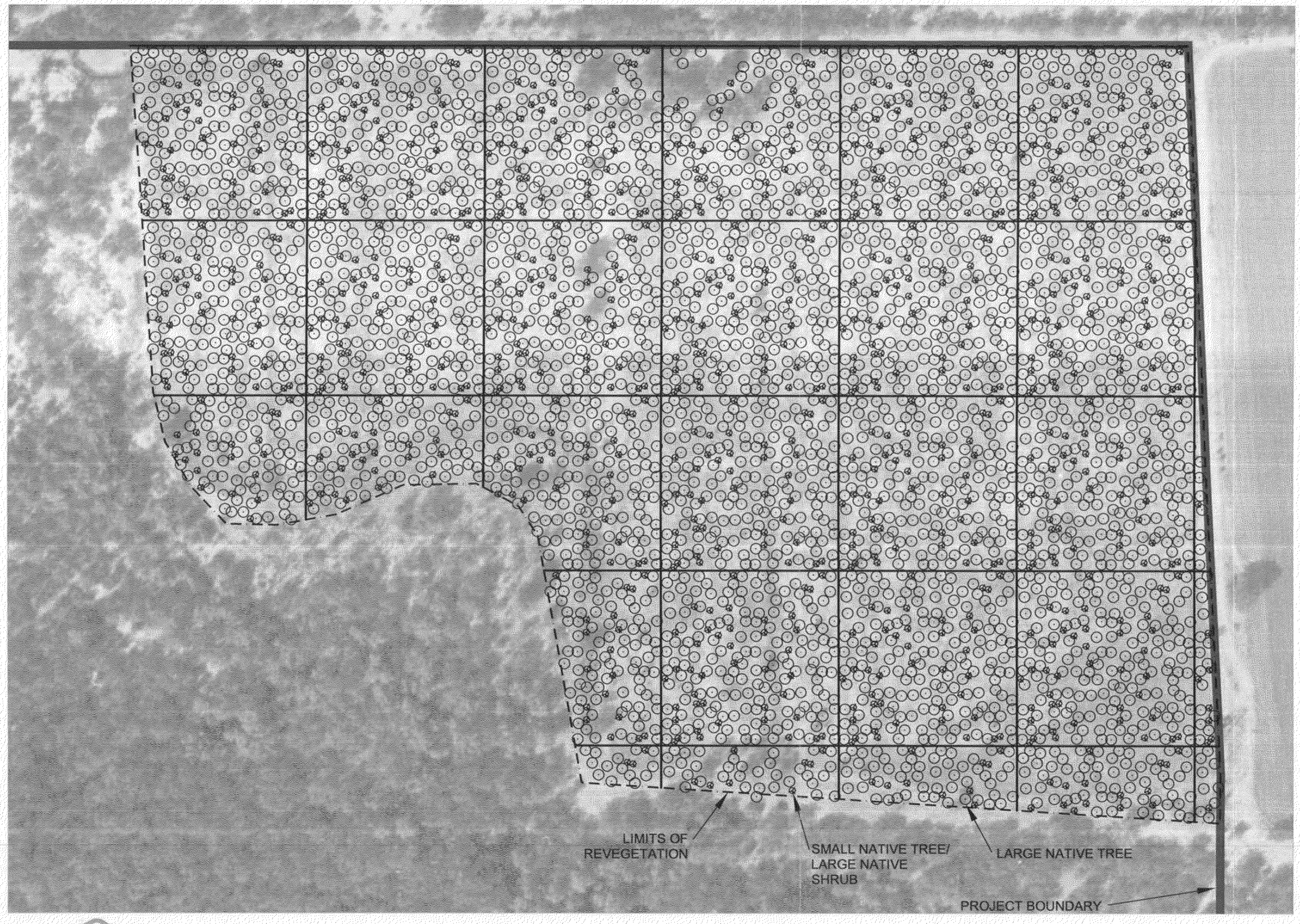

AREA: 21.79 ACRES

TOTAL: 3300 PLANTS
(150/ACRE)

SIZE: 1-5 GAL.

W
S N
E

0' 60' 120'
SCALE 1" = 120'

WHETSTONE RANCH
HMMP

CONCEPTUAL ACTIVE
RESTORATION PLAN

Figure 4

WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

LEGEND

- AGRICULTURE
- DISTURBED
- PROSOPIS VELUTINA WOODLAND
- PROSOPIS VELUTINA SCRUBLAND
- RIVER CHANNEL
- BACCHARIS SALICIFOLIA / TAMARIX RAMOSISSIMA
- GULLY EROSION
- ARTESIAN SPRING / WETLAND
- CHRYSOTHAMNUS NAUSEOUS
- SALIX GOODDINGI
- POPULUS FREMONTII
- TAMARIX RAMOSISIMA

WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

0' 200' 400'
SCALE: 1" = 200'

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WHETSTONE RANCH
HMMP
EXISTING HABITAT OVERVIEW
Figure 2

LEGEND

NATURAL RECOVERY TO PROSOPIS VELUTINA WOODLAND

EROSION CONTROL

WETLAND PROTECTION FENCING

0' 200' 400'
SCALE: 1" = 200'

N
W E
S

WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

WHETSTONE RANCH
HMMP
PROPOSED MANAGEMENT ACTIVITIES
Figure 3

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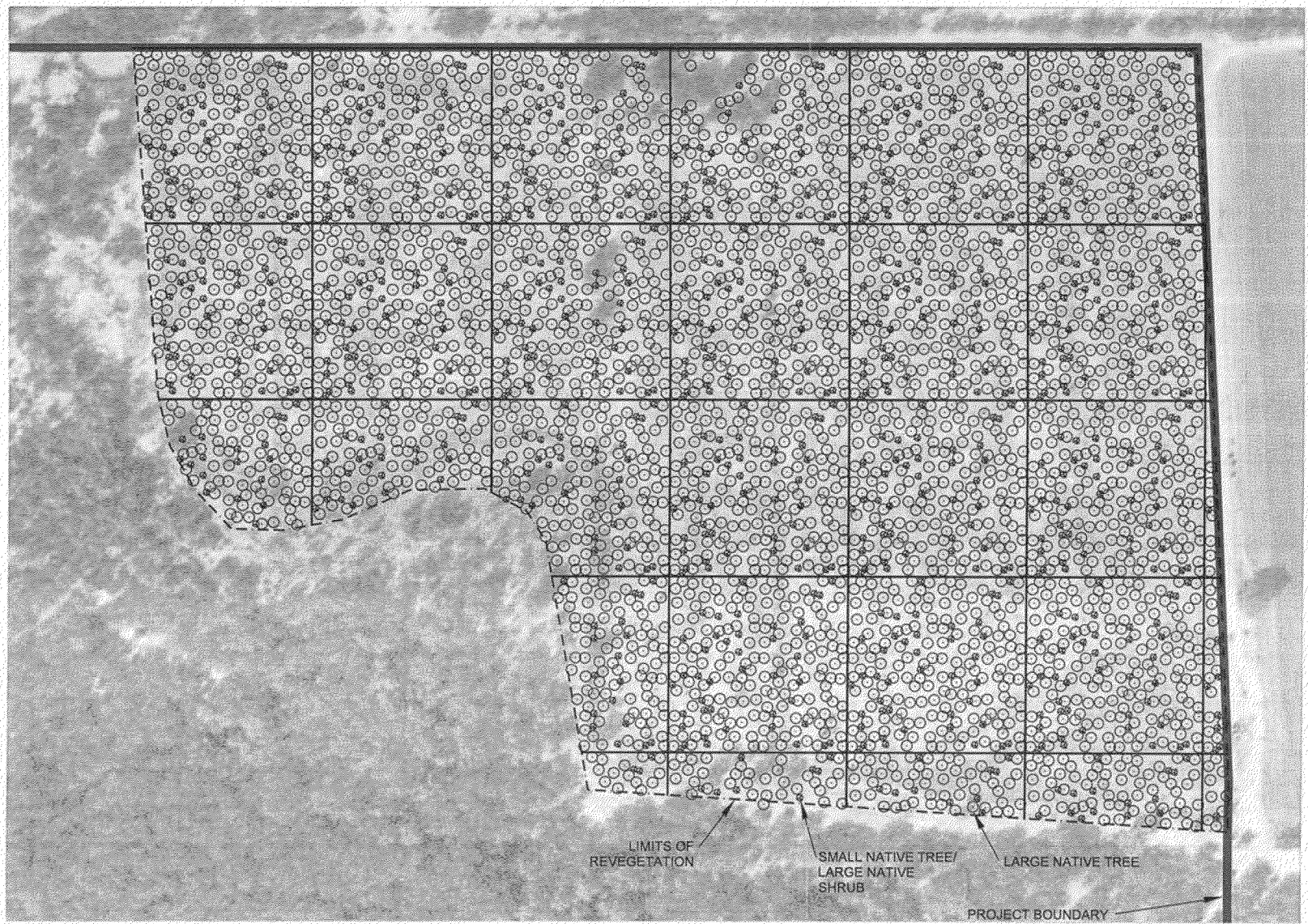

AREA: 21.79 ACRES

TOTAL: 3300 PLANTS (150/ACRE)

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0' 60' 120'
SCALE 1" = 120'

WHETSTONE RANCH

HMMP

CONCEPTUAL ACTIVE RESTORATION PLAN

Figure 4

WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, Az 85719 (520) 206-9585

LEGEND

- AGRICULTURE
- DISTURBED
- PROSOPIS VELUTINA WOODLAND
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- RIVER CHANNEL
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SCALE: 1" = 200'

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W E
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WestLand Resources Inc.
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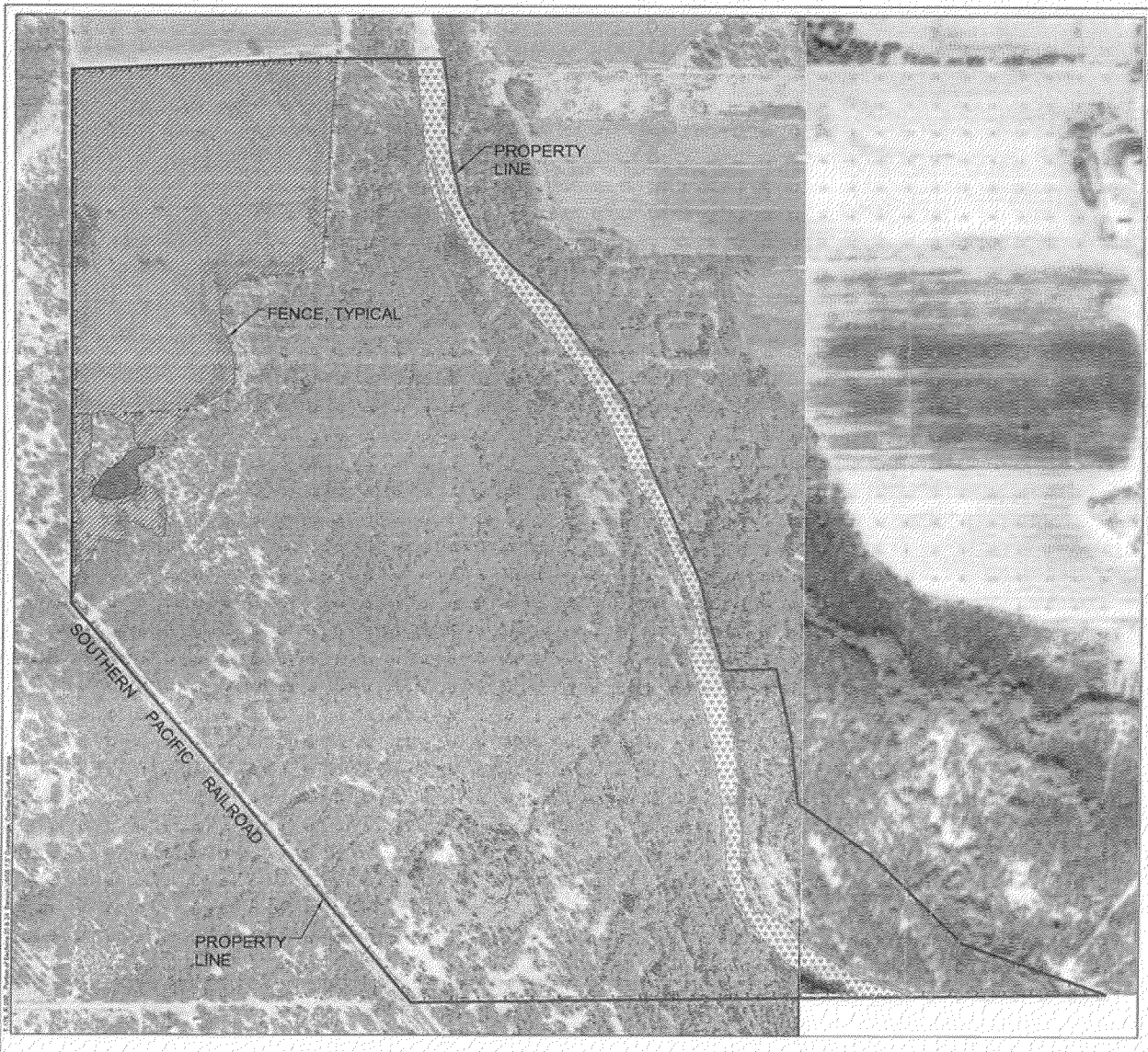
WHETSTONE RANCH
HMMP
EXISTING HABITAT OVERVIEW
Figure 2



LEGEND

NATURAL RECOVERY TO PROSOPIS VELUTINA WOODLAND

EROSION CONTROL

WETLAND PROTECTION FENCING

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W E

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SCALE: 1" = 200'

WestLand Resources Inc.
Engineering and Environmental Consultants
2343 E. Broadway Blvd. Suite 202
Tucson, AZ 85716 · (520) 206-9585

WHETSTONE RANCH

HMMP

PROPOSED MANAGEMENT ACTIVITIES

Figure 3

APPENDIX A

RESTRICTIVE COVENANTS

RECORDING REQUESTED BY AND WHEN RECORDED RETURN TO:

(Space Above Line for Recorder's Use)

DECLARATION OF RESTRICTIVE COVENANTS

(404 Mitigation Areas)

This DECLARATION OF RESTRICTIVE COVENANTS ("**Restrictive Covenant**") is made this ____ day of _____, 200_ by _____ (hereinafter "**Declarant**").

RECITALS

A. Declarant is the developer of that certain real property in _____, County of _____, State of Arizona, commonly referred to as _____ (the "**Project**").

B. Declarant is the sole owner in fee simple of those portions of the Project legally described on **Exhibit "A"** and depicted on **Exhibit "B"** attached hereto and incorporated by this reference (the "**Restricted Property**"), which consists of approximately _____ acres.

C. This Restrictive Covenant provides compensatory mitigation for certain impacts of the Project by Declarant pursuant to requirements of the United States Army Corps of Engineers' ("**ACOE**") Section 404 Permit No. _____ and amendments thereto ("**Section 404 Permit**"). Special Condition ____ of the Section 404 Permit requires Declarant to record a Restrictive Covenant on all compensatory mitigation sites. This Restrictive Covenant is intended and shall be deemed to satisfy such part of Special Condition ____ as to the Restricted Property. Upon completion of the compensatory mitigation requirements required under the Section 404 Permit, the Restricted Property will possess wildlife and native habitat values (collectively, "**Conservation Values**").

D. The ACOE is the Federal agency charged with regulatory authority over discharges of dredged and fill material in waters of the United States pursuant to Section 404 of the Clean Water Act.

COVENANTS, TERMS, CONDITIONS AND RESTRICTIONS

NOW THEREFORE, Declarant hereby declares that the Restricted Property shall be held, transferred, conveyed, leased, occupied or otherwise disposed of and used subject to the following restrictive covenants, which shall run with the land and be binding on Declarant's heirs, successors in interest, administrators, assigns, lessees, or other occupiers and users of the Restricted Property or any portion of it:

1. Purpose.

(a) The purpose of this Restrictive Covenant is to ensure the Restricted Property, after Construction, will be maintained in perpetuity in a Natural Condition, defined below, and to prevent any use of the Restricted Property that will impair or interfere with the Conservation Values of the Restricted Property (the "**Purpose**"). Declarant intends that this Restrictive Covenant will confine the use of the Restricted Property to such activities, including without limitation, those involving the preservation and enhancement of native species and their habitat in a manner consistent with the habitat conservation Purpose of this Restrictive Covenant.

(b) The term "**Natural Condition,**" as referenced in the preceding paragraph and other portions of this Restrictive Covenant, shall mean the condition of the Restricted Property as it exists at the time this Restrictive Covenant is executed, as well as future enhancements or changes to the Restricted Property that occur directly as a result of the following activities:

(1) Compensatory mitigation measures required by the Section 404 Permit, and as described in the Final Mitigation Plan dated ("**Mitigation Plan**"), the cover page and Executive Summary of which are attached as **Exhibit "C,"** including implementation, maintenance and monitoring activities for a five-year period (collectively, **"Compensatory Mitigation**"); or

(2) Activities described in Section 5 herein; or

(3) In-perpetuity maintenance obligations ("**Long-Term Maintenance**") that occurs on the Restricted Property as described in Section 13 herein.

(c) Declarant certifies to the ACOE that, to Declarant's actual knowledge, there are no structures or other man-made improvements existing on the Restricted Property. Declarant further certifies to the ACOE that, to Declarant's actual knowledge, there are no previously granted easements existing on the Restricted Property that interfere or conflict with the purpose of this Restrictive Covenant. The current Natural Condition is evidenced in part by Exhibit B, a surveyed plat of the Restricted Property showing all relevant property lines, easements, and dedications. Declarant has delivered further evidence of the Natural Condition to the ACOE consisting of (1) an aerial photograph of the Restricted Property at an appropriate scale taken as close in time as possible to the date this Restrictive Covenant is executed and (2) an overlay of the Restricted Property boundaries on such aerial photograph.

(d) If a controversy arises with respect to the Natural Condition of the Restricted Property, the ACOE shall not be foreclosed from utilizing any and all other relevant documents, surveys, photographs or other evidence or information to assist in the resolution of the controversy.

2. ACOE's rights. To accomplish the Purpose of this Restrictive Covenant, Declarant hereby grants and conveys the following rights to ACOE, but without obligation of the ACOE:

(a) A non-exclusive easement to preserve and protect the Conservation Values of the Restricted Property; and

(b) A non-exclusive easement to enter upon the Restricted Property to monitor Declarant's compliance with and to otherwise enforce the terms of this Restrictive Covenant; and

(c) A non-exclusive easement to prevent any activity on or use of the Restricted Property that is inconsistent with the Purpose of this Restrictive Covenant and to require the restoration of such areas or features of the Restricted Property that may be damaged by any act, failure to act, or any use that is inconsistent with the Purpose of this Restrictive Covenant; and

(d) All present and future development rights, except for making the land available for restoration and other purposes set forth herein, and provided any exercise of such rights must preserve the Restricted Property in its Natural Condition as that is defined in Section 1(b) of this Restrictive Covenant. Any exercise of present and future development rights by the ACOE shall not be in conflict with the Conservation Values of the Restricted Property; and

(e) The right to enforce by means, including, without limitation, injunctive relief, the terms and conditions of this Restrictive Covenant.

3. Declarant's Duties. Declarant, its successors and assigns shall:

(a) Undertake all reasonable actions to prevent the unlawful entry and trespass by persons whose activities would be inconsistent with the Conservation Values and would violate the permitted uses of the Restricted Property set forth in this Restrictive Covenant;

(b) Comply with the terms of this Restrictive Covenant and cooperate with the ACOE in the protection of the Conservation Values;

(c) Repair and restore damage to the Restrictive Property directly caused by Declarant, Declarant's guests, representatives or agents and third parties;

(d) Obtain any applicable governmental permits and approvals for any activity or use permitted by this Restrictive Covenant, and any activity or use shall be undertaken in accordance with all applicable federal, state, local and administrative agency statutes, ordinances, rules, regulations, orders or requirements;

(e) Undertake construction, maintenance and monitoring of mitigated areas pursuant to the Mitigation Plan until receipt of final approval of the success of the mitigation from the ACOE ("**ACOE Final Approval**");

(f) Perform in-perpetuity Long-Term Maintenance set forth in Section 13 below; and

(g) Install and maintain in perpetuity any and all signs set forth in Section 14 below.

4. Prohibited Uses. Any activity on or use of the Restricted Property inconsistent with the Purpose of this Restrictive Covenant and not reserved as set forth in Section 5 hereof is prohibited. Without limiting the generality of the foregoing, the following uses by Declarant, and its respective guests, agents, assigns, employees, representatives, successors and third parties under Declarant's control, are expressly prohibited on the Restricted Property, except as otherwise provided herein or in the Mitigation Plan, or unless specifically provided for in the

Section 404 Permit and any easements and reservations of rights recorded in the chain of title to the Restricted Property at the time of this conveyance:

(a) Unseasonal watering;

(b) Use of herbicides, pesticides, rodentcides, biocides, fertilizers, or other agricultural chemicals or weed abatement activities;

(c) Incompatible fire protection activities, except fire prevention activities expressly reserved herein;

(d) Use of off-road vehicles and use of any other motorized vehicles except on existing roadways and as necessary to restore native plant communities consistent with Section 5.

(e) Livestock grazing or other agricultural activity of any kind;

(f) Recreational activities including, but not limited to, horseback riding, hunting or fishing;

(g) Residential, commercial or industrial uses;

(h) Any legal or de facto division, subdivision or portioning of the Restricted Property, except transfers in accordance with Section 11 below;

(i) Construction, reconstruction or placement of any building or other improvement, billboard, or sign except as specifically permitted under Sections 3(g) and 14;

(j) Depositing or accumulation of soil, trash, ashes, refuse, waste, bio-solids or any other material;

(k) Planting, introduction or dispersal of non-native or exotic plant or animal species;

(l) Filling, dumping, excavating, draining, dredging, mining, drilling, removing or exploring for or extraction of minerals, loam, gravel, soil, rock, sand or other material on or below the surface of the Restricted Property;

(m) Altering the general topography of the Restricted Property, including but not limited to building of roads and flood control work;

(n) Removing, destroying, or cutting of trees, shrubs or other vegetation, except for (1) fire breaks as required by fire safety officials, (2) maintenance of existing foot trails or roads, (3) control of invasive, exotic plants which threaten the integrity of the habitat, (4) prevention or treatment of disease, or (5) activities described in the Mitigation Plan;

(o) Manipulating, impounding or altering any natural watercourse, body of water or water circulation on the Restricted Property, and activities or uses detrimental to water quality, including, but not limited to, degradation or pollution of any surface or sub-surface waters.

5. Reserved Rights. Declarant reserves to itself, and to its personal representatives, heirs, successors, and assigns, all rights accruing from its ownership of the Restricted Property, including the right to engage in or to permit or invite others to engage in all uses of the Restricted Property that are consistent with the Purpose of this Restrictive Covenant, including the following uses:

(a) Access. Reasonable access through the Restricted Property to adjacent land over existing roads, or to perform obligations or other activities permitted by this Restrictive Covenant or that are required under the Section 404 Permit.

(b) Habitat Enhancement Activities. Restoration of native plant communities, including the right to plant trees and shrubs of the same type as currently existing on the Restricted Property, so long as such activities do not harm the habitat types identified in the Section 404 Permit.

(c) No Interference with Development of Adjoining Property. Notwithstanding anything set forth herein to the contrary, nothing in this Restrictive Covenant is intended nor shall be applied to in any way limit Declarant or any of Declarant's successors and assigns from (i) constructing, placing, installing, and/or erecting any improvements upon the portions of the Parcel not constituting the Restricted Property, (ii) installing and/or maintaining the subsurface infrastructure improvements, utility lines, landscaping (including irrigation and runoff), landscape mitigation, and/or similar non-structural improvements within the Restricted Property, and/or (iii) developing adjoining property for any purposes, except as limited by any local, state or federal permit requirements for such development and provided that for all of the above clauses (i), (ii) and (iii) neither such activity nor any effect resulting from such activity amounts to a use of the Restricted Property, or has an impact upon the Restricted Property, that is prohibited by Section 4 above.

(d) Fire Protection. The right to maintain firebreaks, trim or remove brush, otherwise perform preventative measures required by the fire department to protect structures and other improvements from potential fires, and perform any other brush management activities in compliance with the applicable brush management programs of the local jurisdictions and consistent with the terms and conditions of the permits, entitlement and approvals issued for development of the Project of which the Restricted Property is a part.

6. Enforcement.

(a) Declarant, its subsequent transferees and assigns, grant to the ACOE a discretionary right to enforce these restrictive covenants in a judicial action against any person(s) or other entity(ies) violating or attempting to violate this Restrictive Covenant; provided, however, that no violation of this Restrictive Covenant shall result in a forfeiture or reversion of title. The rights under this Section are in addition to, and do not limit rights conferred in Section 2 above, the rights of enforcement against Declarant, its successor or assigns under the Section 404 Permit, or any rights of the various documents created thereunder or referred to therein.

(b) Notice.

(1) If ACOE determines Declarant is in violation of the terms of this Restrictive Covenant, ACOE may demand the cure of such violation. In such a case, ACOE shall issue a written notice to Declarant (hereinafter "**notice of violation**") informing Declarant of the violation and demanding cure of such violation.

(2) Declarant shall cure the noticed violation within fifteen (15) days of receipt of said written notice from ACOE. If said cure reasonably requires more than fifteen (15) days, Declarant shall begin cure within the fifteen (15) day period and work diligently to complete such cure. If Declarant disputes the notice of violation, it shall issue a written notice of such dispute (hereinafter "**notice of dispute**") to the ACOE within fifteen (15) days of receipt of written notice of violation.

(3) If Declarant fails to cure the noticed violation(s) within the time period(s) described in Section 6(b)(2) above, or Section 6(c) below, ACOE may bring an action at law or in equity in a court of competent jurisdiction to enforce compliance by Declarant with the terms of this Restrictive Covenant. In such action, the ACOE may (i) recover any damages to which they may be entitled for violation by Declarant of the terms of this Restrictive Covenant, (ii) enjoin the violation, *ex parte* if necessary, by temporary or permanent injunction without the necessity of proving either actual damages or the inadequacy of otherwise available legal remedies, or (iii) pursue other equitable relief, including, but not limited to, the restoration of the Restricted Property to the condition in which it existed prior to any such violation or injury. ACOE may apply any damages recovered to the cost of undertaking any corrective action on the Restricted Property.

(4) If Declarant provides ACOE with a notice of dispute, as provided herein, ACOE shall meet and confer with Declarant at a mutually agreeable place and time, not to exceed thirty (30) days from the date that ACOE receives the notice of dispute. ACOE shall consider all relevant information concerning the disputed violation provided by Declarant and shall determine whether a violation has in fact occurred and, if so, whether the notice of violation and demand for cure issued by ACOE is appropriate in light of the violation.

(5) If, after reviewing Declarant's notice of dispute, conferring with Declarant, and considering all relevant information related to the violation, ACOE determines that a violation has occurred, ACOE shall give Declarant notice of such determination in writing. Upon receipt of such determination, Declarant shall have fifteen (15) days to cure the violation. If said cure reasonably requires more than fifteen (15) days Declarant shall begin cure within the fifteen (15) day period and work diligently to complete such cure.

(c) Immediate Action. If ACOE, in its reasonable discretion, determines that circumstances require immediate action to prevent or mitigate significant damage to the Conservation Values of the Restricted Property, ACOE may immediately pursue all available remedies, including injunctive relief, available pursuant to both this Restrictive Covenant and state and federal law after giving Declarant at least twenty four (24) hours' written notice before pursuing such remedies. So long as such twenty four (24) hours' notice is given, ACOE may immediately pursue all available remedies without waiting for the expiration of the time periods

provided for cure or notice of dispute as described in Section 6(b)(2). The written notice pursuant to this paragraph may be transmitted to Declarant by facsimile. The rights of ACOE under this paragraph apply equally to actual or threatened violations of the terms of this Restrictive Covenant. Declarant agrees that the remedies at law for ACOE for any violation of the terms of this Restrictive Covenant are inadequate and that ACOE shall be entitled to the injunctive relief described in this section, both prohibitive and mandatory, in addition to such other relief to which ACOE may be entitled, including specific performance of the terms of this Restrictive Covenant, without the necessity of proving either actual damages or the inadequacy of otherwise available legal remedies. The remedies described in this Section 6(c) shall be cumulative and shall be in addition to all remedies now or hereafter existing at law or in equity.

(d) Costs of Enforcement. Any costs incurred by ACOE in enforcing the terms of this Restrictive Covenant against Declarant including, but not limited to, costs of suit and attorneys' fees, and any costs of restoration necessitated by Declarant's violation or negligence under the terms of this Restrictive Covenant shall be borne by Declarant, subject to Arizona Revised Statutes Section 12-341.01.

(e) Enforcement Discretion. Enforcement of the terms of this Restrictive Covenant shall be at the discretion of ACOE. Any forbearance by ACOE to exercise rights under this Restrictive Covenant in the event of any breach of any term of this Restrictive Covenant by Declarant shall not be deemed or construed to be a waiver by ACOE of such term or of any subsequent breach of the same or any other term of this Restrictive Covenant or of any of the rights of ACOE under this Restrictive Covenant. No delay or omission by ACOE in the exercise of any right or remedy upon any breach by Declarant shall impair such right or remedy or be construed as a waiver.

(f) Acts Beyond Declarant's Control. Nothing contained in this Restrictive Covenant shall be construed to entitle ACOE to bring any action against Declarant for any injury to or change in the Restricted Property resulting from:

(1) Any natural cause beyond Declarant's control, including without limitation, fire, flood, storm, and earth movement; or

(2) Any prudent action taken by Declarant under emergency conditions to prevent, abate, or mitigate significant injury to persons and/or the Restricted Property resulting from such causes; or

(3) Acts by third parties beyond the control of the Declarant.

Any action undertaken during emergency conditions must receive prior authorization from the Department of Army (through expedited procedures, if appropriate) if the action involves a discharge of dredged or fill material into waters of the United States.

7. Access. This Restrictive Covenant does not convey a general right of access to the public or a general right of access to the Restricted Property. This Restrictive Covenant will allow for access to the Restricted Property by the ACOE and third-party easement holders of record at the time of this conveyance at locations designated in easements and reservations of rights recorded in the chain of title to the Restricted Property at the time of this conveyance.

8. Costs and Liabilities. Declarant, or its successor or assign retains all responsibilities and shall bear all costs and liabilities of any kind related to the ownership, operation, upkeep, and maintenance of the Restricted Property. Declarant, its successor or assign remains solely responsible for obtaining any applicable governmental permits and approvals for any activity or use permitted by this Restrictive Covenant, and any activity or use shall be undertaken in accordance with all applicable federal, state, local and administrative agency statutes, ordinances, rules, regulations, orders and requirements.

9. Taxes. Declarant, its successor or assign shall pay before delinquency all taxes, assessments, fees, and charges of whatever description levied on or assessed against the Restricted Property by competent authority, including any taxes imposed upon, or incurred as a result of, this Restrictive Covenant, and agrees to furnish ACOE with satisfactory evidence of payment upon request.

10. Condemnation. The Purpose of the Restricted Property for conservation purposes are presumed to be the best and most necessary public use as defined at Arizona Revised Statutes Section 12-1122.

11. Subsequent Transfers.

(a) The terms of this Restrictive Covenant shall be deemed automatically incorporated into any deed or other legal instrument by which Declarant divests itself of any interest in all or a portion of the Restricted Property. Declarant, its successor or assign agrees to (1) incorporate by reference to the title of and the recording information for this Restrictive Covenant in any deed or other legal instrument by which each divests itself of any interest in all or a portion of the Restricted Property, including, without limitation, a leasehold interest and (2) give actual notice to any such transferee or lessee of the existence of this Restrictive Covenant. Declarant, its successor or assign agrees to give written notice to ACOE of the intent to transfer any interest at least thirty (30) days prior to the date of such transfer. Any subsequent transferee shall be deemed to have assumed the obligations of this Restrictive Covenant and to have accepted the restrictions contained herein. The failure of Declarant, its successor or assign to perform any act provided in this Section 11 shall not impair the validity of this Restrictive Covenant or limit its enforceability in any way.

(c) From and after the date of any transfer of all or any portion of the Restricted Property by Declarant and each transfer thereafter, (1) the transferee shall be deemed to have assumed all of the obligations of Declarant as to the portion transferred, as set forth in this Restrictive Covenant, (2) the transferee shall be deemed to have accepted the restrictions contained herein as to the portion transferred, (3) the transferor, as applicable, shall have no further obligations hereunder, and (4) all references to Declarant in this Restrictive Covenant shall thereafter be deemed to refer to such transferee.

12. Notices. Any notice, demand, request, consent, approval, or communication that either party desires or is required to give to the other shall be in writing and be served personally or sent by certified first class mail, postage prepaid and return receipt request, addressed as follows:

To Declarant: [Address]

To ACOE: U.S. Army Corps of Engineers
District Counsel
Los Angeles District
915 Wilshire Blvd, Room 1535
Los Angeles, CA 90017-3401

or to such other address as either party shall designate by written notice to the other. Notice shall be deemed effective upon delivery in the case of personal delivery or, in the case of delivery by first class mail, five (5) days after deposit into the United States mail.

13. Long-Term Maintenance. In addition to the other terms contained herein, Declarant shall be responsible for the ongoing maintenance/repair of the Restricted Property. Such long-term maintenance shall consist of the following activities: [insert].

14. Installation and Maintenance of Signage. Declarant shall post appropriate signage identifying the Restricted Property and shall maintain such signage in-perpetuity.

15. Amendment. Declarant may amend this Restrictive Covenant only after written concurrence by ACOE. Any such amendment shall be consistent with the Purpose of this Restrictive Covenant and shall not affect its perpetual duration. Any such amendment shall be recorded in the official records of _____ County, State of Arizona.

16. Recordation. Declarant shall promptly record this instrument in the official records of _____ County, Arizona, and immediately notify the ACOE through the mailing of a conformed copy of the recorded covenant.

17. Estoppel Certificate. Upon request, ACOE shall within fifteen (15) days execute and deliver to Declarant, its successor or assign any document, including estoppel certificate, which certifies compliance with any obligation of Declarant, its successor or assign contained in this Restrictive Covenant or otherwise evidences the status of this Restrictive Covenant as may be requested by Declarant, its successor or assign.

18. Controlling Law. The laws of the United States and the State of Arizona shall govern the interpretation and performance of this Restrictive Covenant.

19. Liberal Construction. Any general rule of construction to the contrary notwithstanding, this Restrictive Covenant shall be liberally construed to effect the Purpose of this Restrictive Covenant. If any provision in this instrument is found to be ambiguous, an interpretation consistent with the Purpose of this Restrictive Covenant that would render the provision valid shall be favored over any interpretation that would render it invalid.

20. Severability. If a court of competent jurisdiction voids or invalidates on its face any provision of this Restrictive Covenant, such action shall not affect the remainder of this Restrictive Covenant. If a court of competent jurisdiction voids or invalidates the application of any provision of this Restrictive Covenant to a person or circumstance, such action shall not affect the application of the provision to other persons or circumstances.

21. No Forfeiture. Nothing contained herein will result in a forfeiture or reversion of Declarant's title in any respect.

22. Successors. The covenants, terms, conditions, and restrictions of this Restrictive Covenant shall be binding upon, and inure to the benefit of, the parties hereto and their respective personal representatives, heirs, successors, and assigns and shall continue as a servitude running in perpetuity with the Restricted Property.

23. Termination of Rights and Obligations. A party's rights and obligations under this Restrictive Covenant terminate upon transfer of the party's interest in the Restricted Property, except that liability for acts or omissions occurring prior to transfer shall survive transfer.

24. Captions. The captions in this instrument have been inserted solely for convenience of reference and are not a part of this instrument and shall have no effect upon construction or interpretation.

25. No Hazardous Materials Liability.

(a) Declarant represents and warrants that it has no actual knowledge of any release or threatened release of Hazardous Materials (defined below) in, on, under, about or affecting the Restricted Property in violation of Environmental Laws.

(b) Despite any contrary provision of this Restrictive Covenant, the parties do not intend this Restrictive Covenant to be, and this Restrictive Covenant shall not be, construed such that it creates in or gives ACOE any of the following:

(1) The obligations or liabilities of an "owner" or "operator," as those terms are defined and used in Environmental Laws (defined below), including, without limitation, the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (42 U.S.C. Section 9601 et seq.; hereinafter, "**CERCLA**"); or

(2) The obligations or liabilities of a person described in 42 U.S.C. Section 9607(a)(3) or (4); or

(3) The obligations of a responsible person under any applicable Environmental Laws; or

(4) The right to investigate and remediate any Hazardous Materials associated with the Restricted Property; or

(5) Any control over Declarant's ability to investigate, remove, remediate or otherwise clean up any Hazardous Materials associated with the Restricted Property.

(c) The term "**Hazardous Materials**" includes, without limitation, (1) material that is flammable, explosive or radioactive; (2) petroleum products, including by-products and fractions thereof; and (3) hazardous materials, hazardous wastes, hazardous or toxic substances, or related materials defined in CERCLA, the Resource Conservation and Recovery Act (42 U.S.C. Section 6901 et seq.); the Hazardous Materials Transportation Act (49 U.S.C. Section 5101 et seq.); Title

49 of Arizona Revised Statutes, and in the regulations adopted and publications promulgated pursuant to them, or any other applicable federal, state or local laws, ordinances, rules, regulations or orders now in effect or enacted after the date of this Restrictive Covenant.

(d) The term "**Environmental Laws**" includes, without limitation, any federal, state, local or administrative agency statute, ordinance, rule, regulation, order or requirement relating to pollution, protection of human health or safety, the environment or Hazardous Materials. Declarant's activities upon and use of the Restricted Property shall comply with all Environmental Laws.

26. Additional Easements. Declarant shall not grant any additional easements, rights of way or other interests in the Restricted Property (other than a security interest that is subordinate to this Restrictive Covenant), or grant or otherwise abandon or relinquish any water agreement relating to the Restricted Property, without first obtaining the written consent of ACOE. ACOE may withhold such consent if it determines that the proposed interest or transfer is inconsistent with the Purpose of this Restrictive Covenant or will impair or interfere with the Conservation Values of the Restricted Property. This Section shall not prohibit transfer of a fee or leasehold interest in the Restricted Property that is subject to this Restrictive Covenant and complies with Section 11.

27. ACOE Benefited Party. The terms of this Restricted Covenant are for the benefit of the ACOE only and are not for the benefit of any other party.

IN WITNESS WHEREOF Declarant has executed this Restrictive Covenant the day and year first above written.

"**Declarant**"

By:_____
Name: _____
Title: _____
Date: _____

:STATE OF ARIZONA)
COUNTY OF) ss.

On _____, 200___, before me, the undersigned, a Notary Public in and for said State, personally appeared:

_____,

[ ]Personally known to me - **OR** - [ ] Proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

_____

(SEAL) Notary Public

EXHIBIT A

EXHIBIT B

EXHIBIT C

APPENDIX B

PHOTOGRAPHS OF OFF-SITE MITIGATION PARCEL

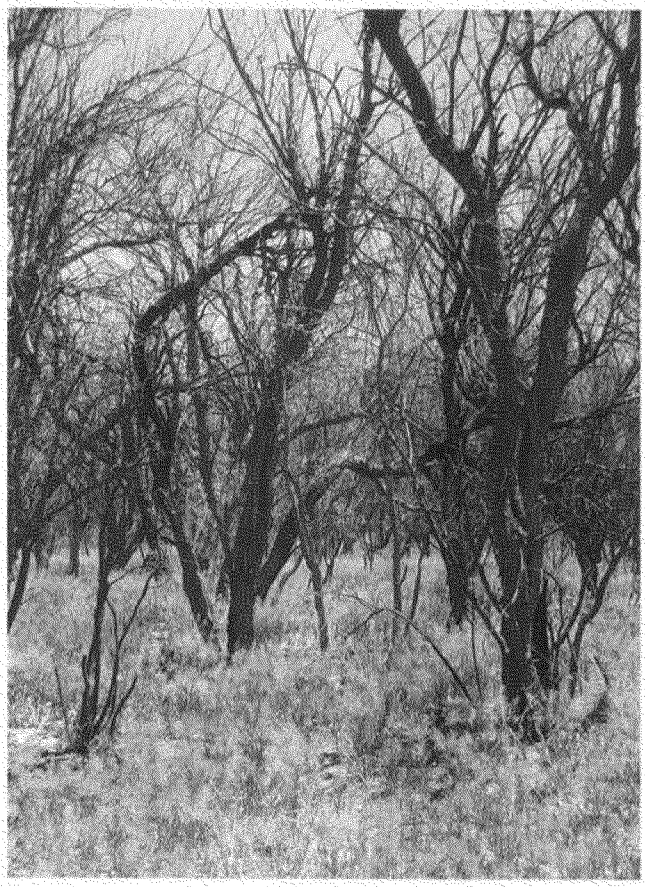

PHOTO 1

Mesquite (*Prosopis velutina*) woodland in mid-April 2005 as trees were coming out of dormancy.

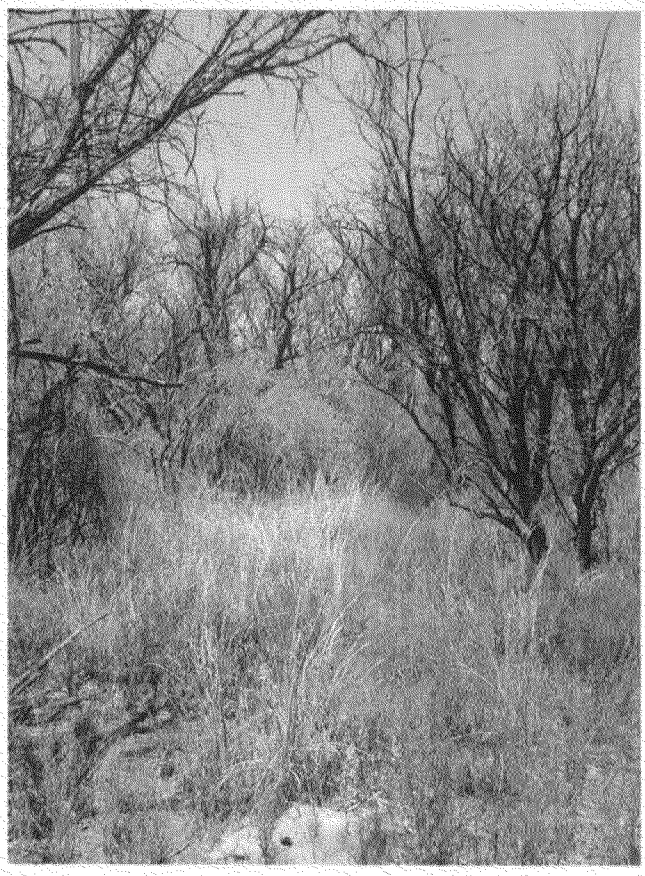

PHOTO 2

Mesquite woodland with big sacaton (*Sporobolus wrightii*), graythorn (*Ziziphus obtusifolia*), and four-wing saltbush (*Atriplex canescens*) understory.

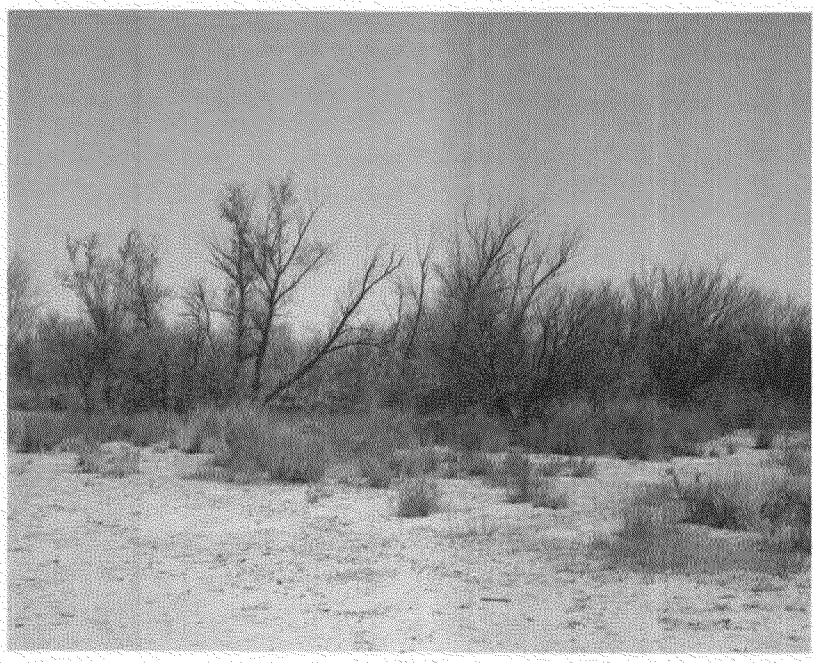

PHOTO 3

Artesian spring and wetland complex near southwest corner of agricultural fields. Perimeter of wetland is lined with willow (*Salix gooddingi*), saltcedar (*Tamarix ramosissima*), and alkali sacaton.

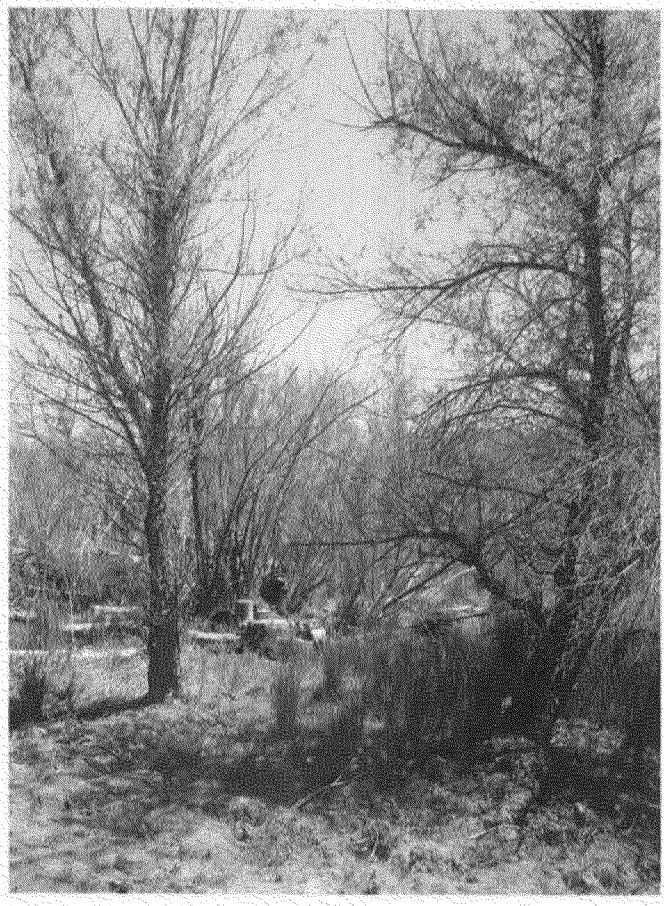

PHOTO 4

View of artesian spring fitted capped with 6" pipe and ¾" threaded outlet. Willow with partial canopy dieback in foreground.

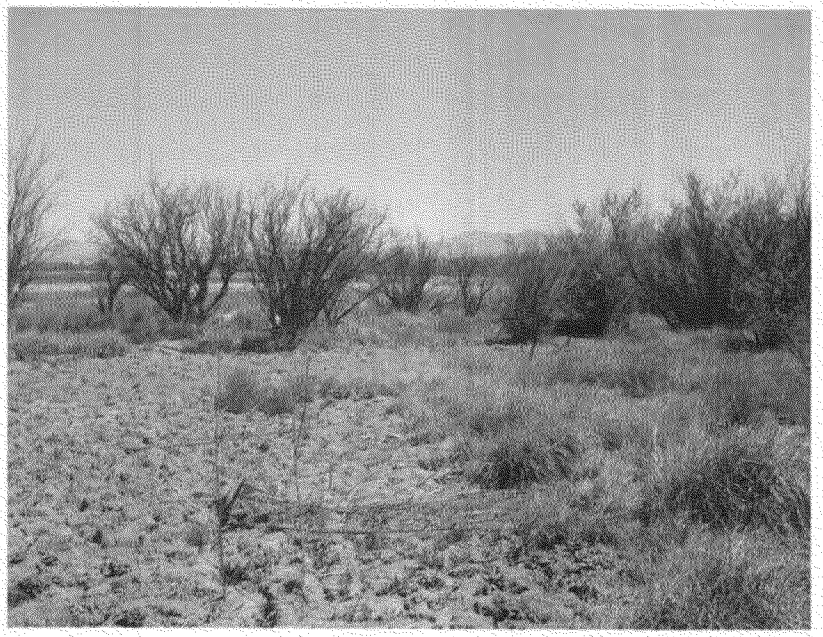

PHOTO 5

Down gradient of artesian spring/wetland complex with alkali sacaton and mesquite. Bare ground in foreground shows evidence of being formerly vegetated.

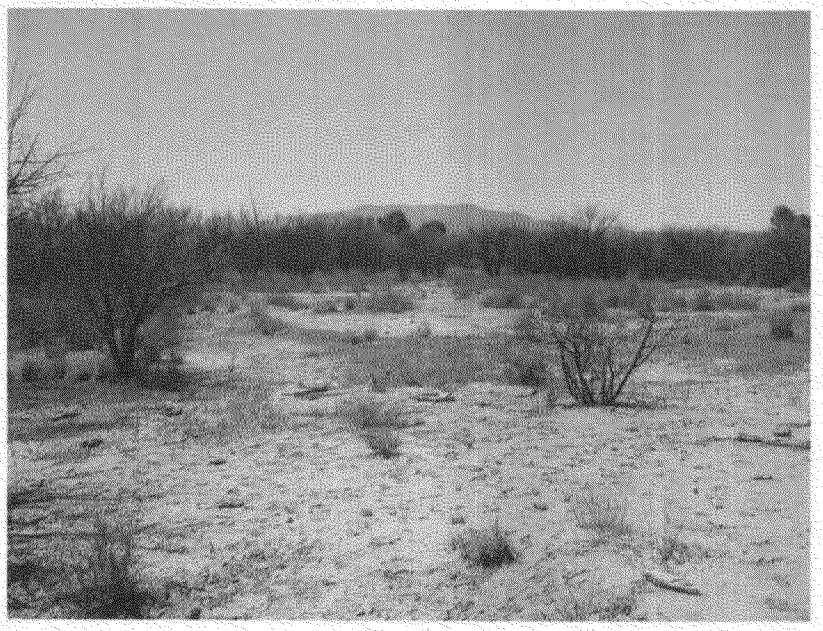

PHOTO 6

Disturbed area in vicinity of artesian spring/wetland complex. Potential mesquite woodland vegetation area.

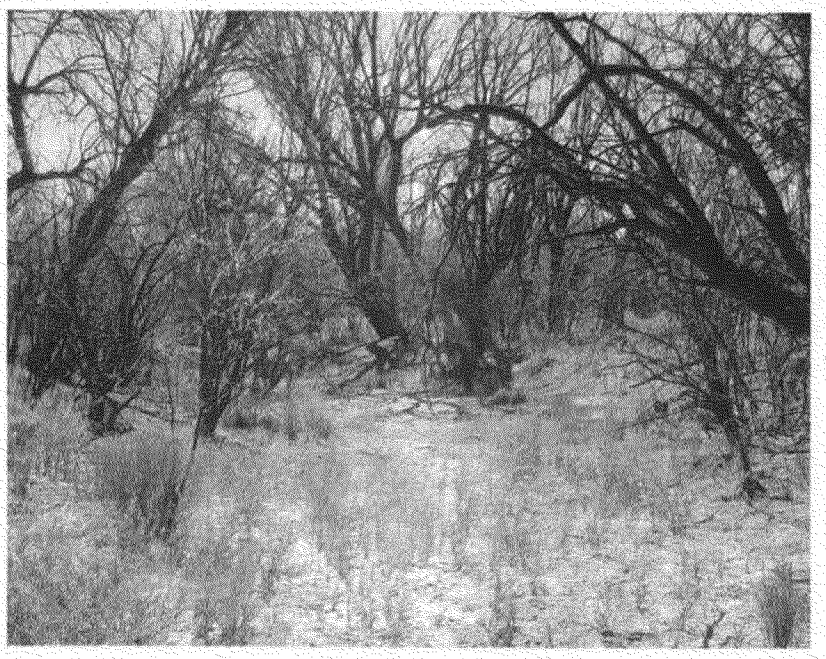

PHOTO 7

Portion of pre-1900's gully with sloped banks and vegetation growing in channel.

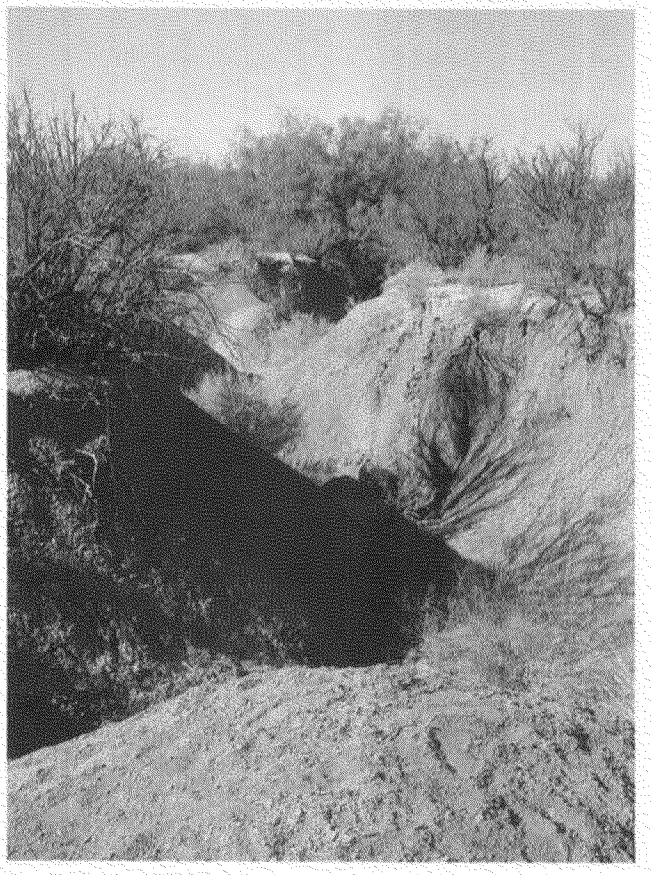

PHOTO 8

Pre-1990's gully in southwest portion of the Parcel. Active erosion and headcutting continues within portions of large network of gullies in this area.

PHOTO 9

Active headcut erosion within large gully complex in southwest portion of the Parcel. Potential location for erosion control efforts.

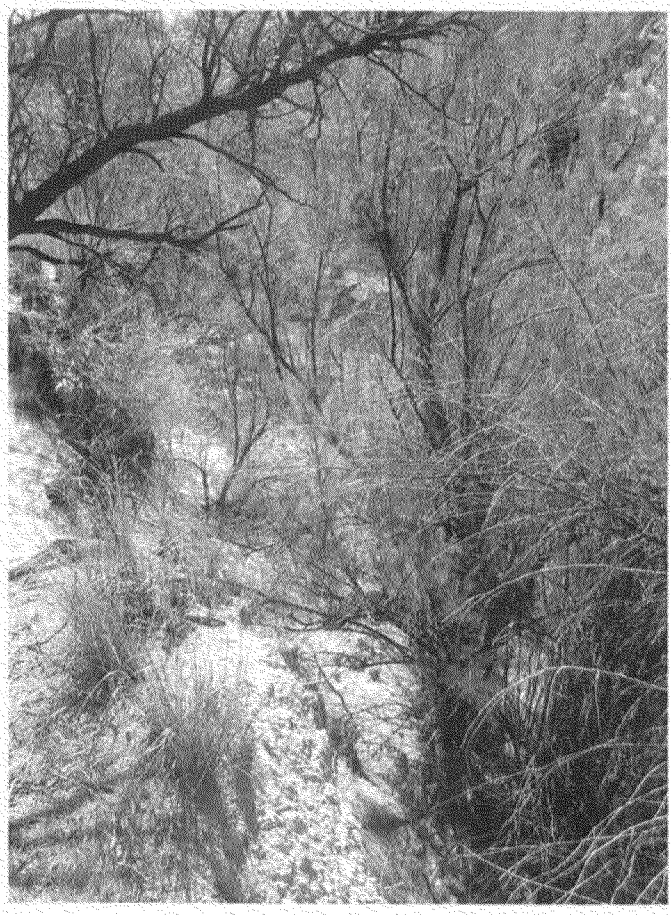

PHOTO 10

Saltcedar growing within deeply incised gully. Note level of pre-entrenchment terrace about 10 feet above base of gully.

PHOTO 11

Mesquite scrubland in southwest portion of the Parcel in close proximity to gully erosion complex.

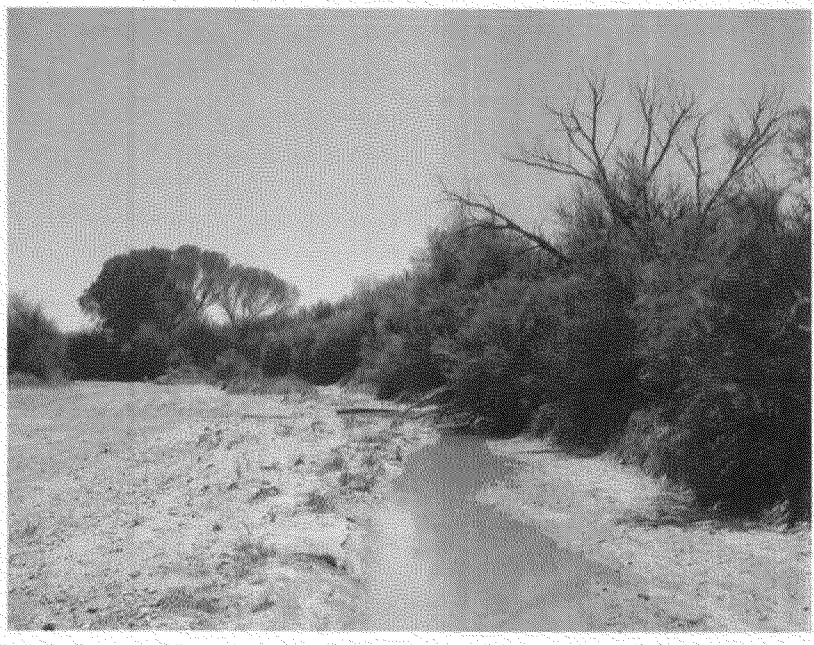

PHOTO 12

San Pedro River looking downstream from upper portion of the Parcel. Floodplain is dominated by saltcedar with isolated pockets of cottonwood and willow. Water is irrigation runoff from agricultural fields.

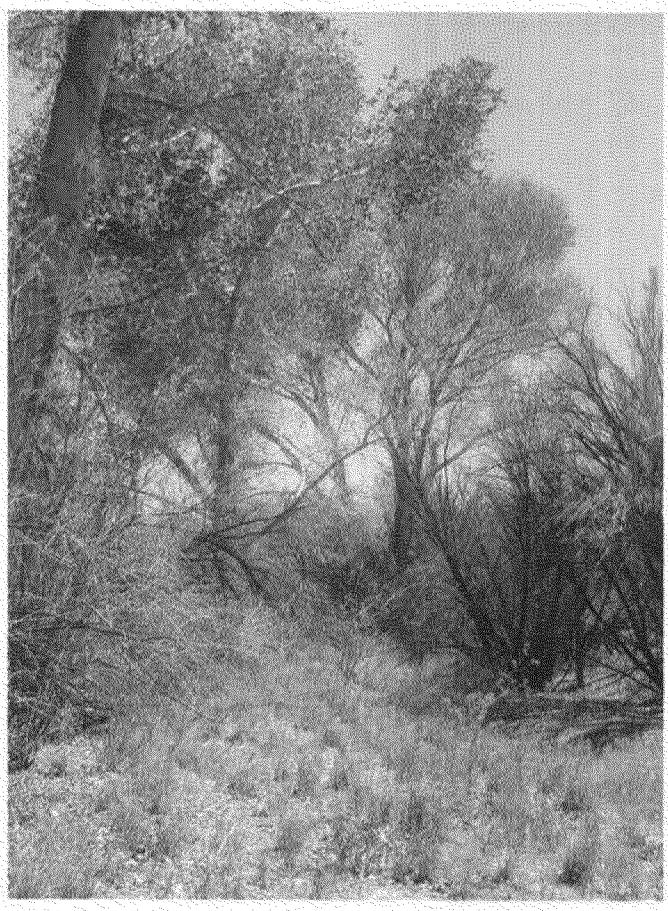

PHOTO 13

Stand of cottonwood (*Populus fremontii*) and willow with scattered saltcedar.

PHOTO 14

East bank of the San Pedro River with saltcedar woodland.

PHOTO 15

Open area with scattered saltcedar on west bank of the San Pedro River.

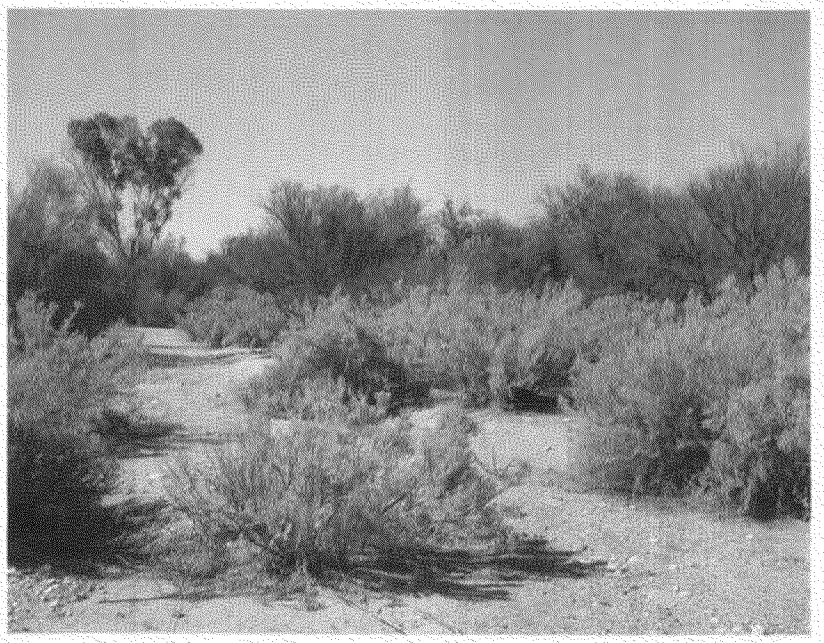

PHOTO 16

Patch of rabbitbrush (*Chrysothamnus nauseosus*) scrubland on east bank of the San Pedro River in the southeast portion of the Parcel.

PHOTO 17

Young cottonwoods growing on sandbar on east bank of the San Pedro River in the southeast portion of the Parcel.

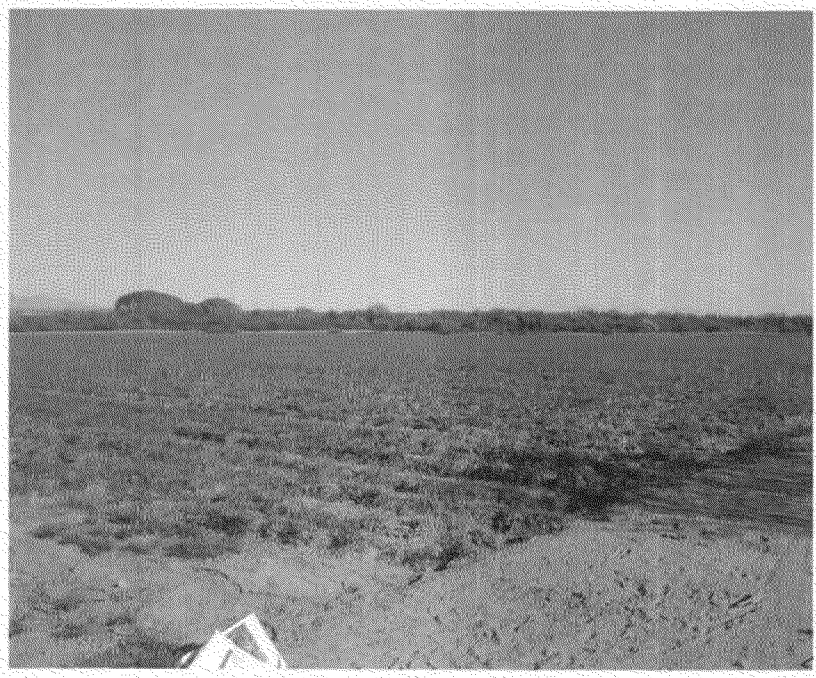

PHOTO 18

View looking southeast across agricultural fields cropped with sudangrass (*Sorghum sudanese*). Potential for natural recovery to mesquite woodland once fields are retired.

PHOTO 19

Furrow irrigation and infrastructure in agricultural fields.

PHOTO 20

Diesel powered well (left center), which irrigates agricultural fields. Well is located outside the Parcel on adjoining property.

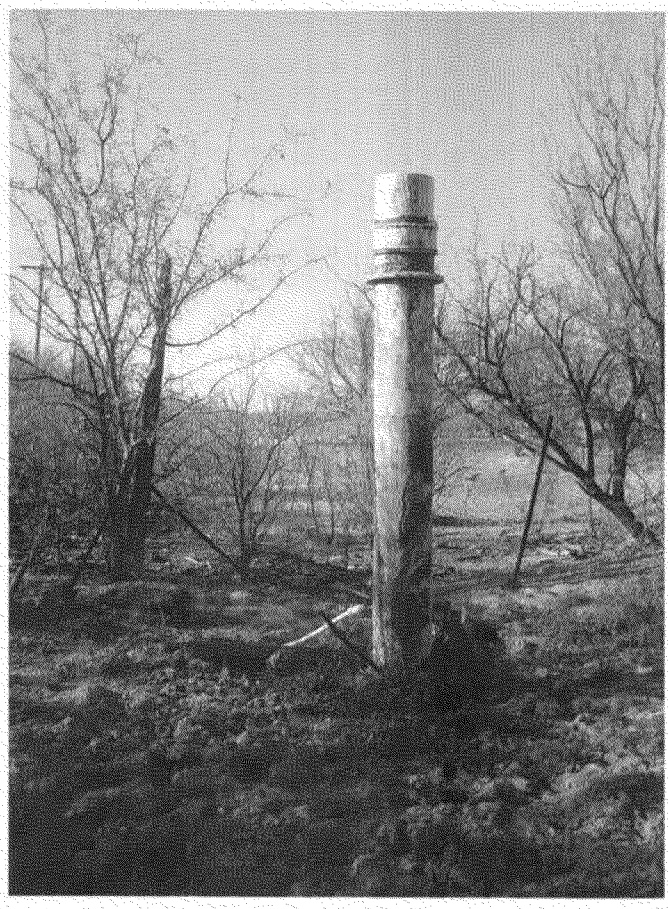

PHOTO 21

Abandoned former artesian well on western border of southern agricultural field.

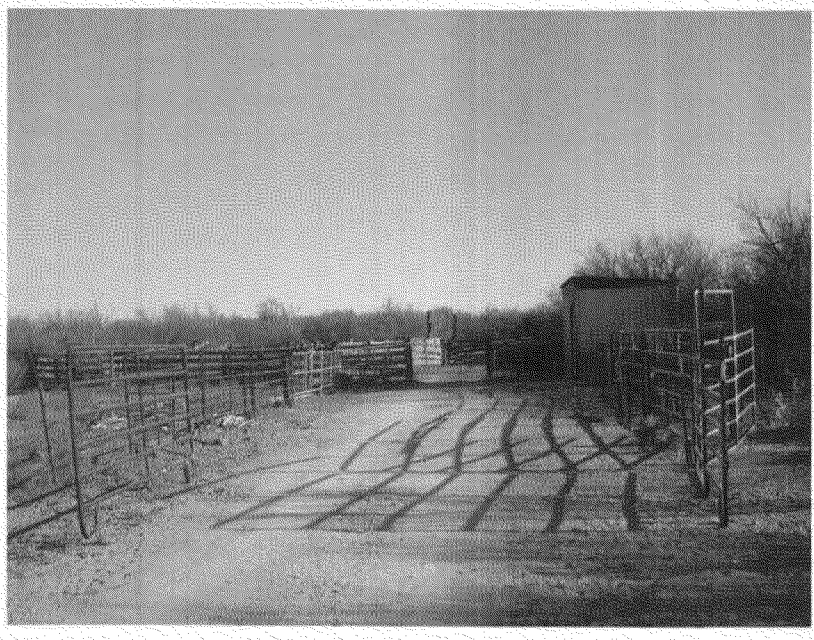

PHOTO 22

Corral and outbuilding in southwest corner of agricultural fields.

PHOTO 23

Access road to San Pedro River in northeast portion of the Parcel. Road is accessible via property to north of Parcel.

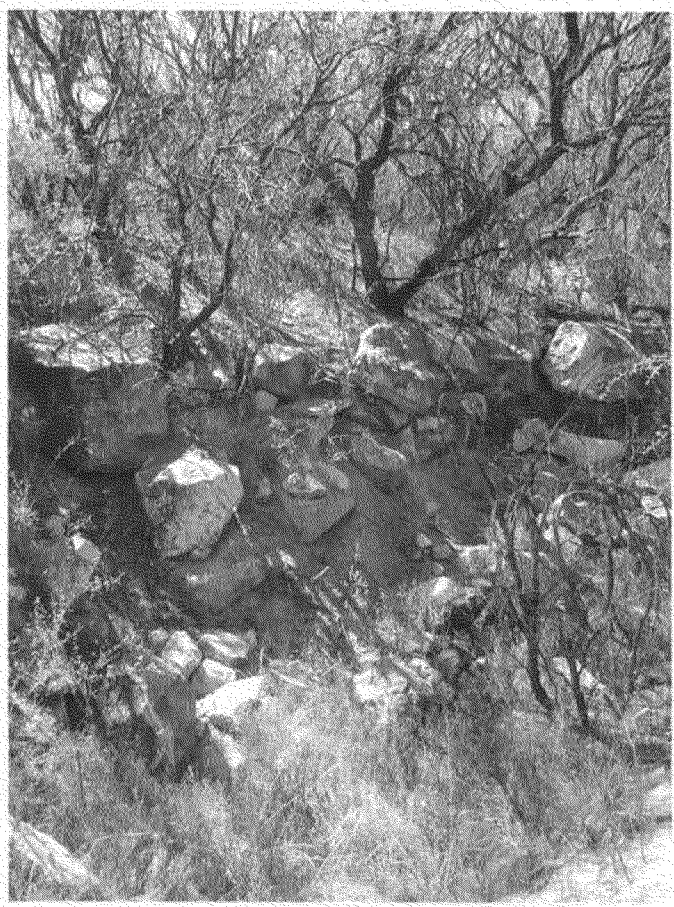

PHOTO 24

Abandoned railroad grade capped with boulders that traverses the Parcel from southeast to northwest.